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# U.S. Robotics *SureConnect*<sup>™</sup> ADSL Ethernet/USB Router User Guide

**Windows 95, 98, NT 4.0, Me, 2000, XP or later, Mac  
and Linux**

## Installing the Router

Welcome to the Web page for your U.S. Robotics *SureConnect*<sup>™</sup> ADSL Ethernet/USB Router, Model 9003. This Web page details five aspects of your router...

- **Installation & Uninstallation:** Complete instructions on how to set up your router.
- **Configuring the Modem:** Command-level discussion of all three user interfaces, with examples.
- **Troubleshooting:** Q&A format. Covers typical questions.
- **Glossary:** ADSL jargon, rendered into English.
- **Regulatory Information:** Declaration of Conformity, FCC & CE compliance statement, etc.

### Technical Support

For current product support and contact information, go to the Support section of the U.S. Robotics Web site:

<http://www.usr.com/broadbandsupport>

**Ready. Set. Connect.**

**U.S. Robotics  
part number  
R46.0216.00**





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# U.S. Robotics SureConnect™ ADSL Ethernet/USB Router User Guide

Windows 95, 98, NT 4.0, Me, 2000, XP or later, Mac and Linux

## Web User Interface

### Overview

The Web User Interface (*WUI*) is one of three router user interfaces. The other interfaces are the Terminal User Interface (*TUI*) and Command Line Interface (*CLI*). Each interface allows you to set up, modify, and view router configuration variables and operational data.

The Web User Interface is a system of graphical menus. Menu pages control router parameters and provide information about them. The WUI organizes these router parameters into six topics. Here are the six topics, in the order that the WUI displays them...

- |                             |                     |
|-----------------------------|---------------------|
| • Quick Setup               | • Firewall Settings |
| • Service Provider Settings | • Tools             |
| • Network Settings          | • Statistics        |

This part of the manual discusses all but the Quick Setup topic. You'll find information on using the Quick Setup feature in the Quick Installation Guide.

This manual begins topic discussions with a picture of the top-level menu screen. A description of screen terms and procedures follows each screen shot. Either text or a table defines screen variables. Afterward, summarized, step-by-step procedures often follow.

**Selecting Topics.** When you look at a menu page, notice the divider tabs at the very top of the page. You can access any of the six router configuration and information topics by clicking on its tab. The graphic below portrays the six divider tabs as they appear on a menu.

**Divider Tabs •**



**Configuration Options.** Most menus present configuration options and prompt you for a response. For example, the screen may help you to set up service provider, network or firewall parameters. Some menus offer additional or more specific options by presenting lower-level (secondary) screens. The bottom of many screens includes a set of graphical buttons. Clicking one of the buttons with your mouse determines the disposition of options on the page. For example...

- Add
- Delete
- Modify
- Disable
- Configure XXX
- Erase

**Selecting or Enabling Features.** You can select menu options by clicking radio buttons or checking boxes on the screen. In either case, use your mouse to make selections. Radio buttons allow you to select only one of several options. Checkboxes allow you to enable none, one or many features. The graphic below includes examples of both radio buttons and checkboxes.

#### Radio Buttons •



#### Checkboxes •



## Accessing the Web User Interface

Your router includes the SureConnect ADSL Web Utility. This Web utility displays after you complete installation.

To access the Web User Interface, follow these steps...

1. Install your router according to the *Quick Installation Guide*.
2. Connect the router to the Ethernet or USB port on your PC.
3. Open a Web browser and go to IP address <http://192.168.1.1>. (Otherwise, go to the LAN IP designated for the router's management port.)
4. At the prompt, type in your user name and password. The default user name is "root." The default password is "12345." (*Don't type the quotation marks or period.*)

## Service Provider Setting Page

Select	Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input type="radio"/>	PPPoA	36	VC	Off	None	None	nttran	Chap		NA	NA	InActive

## WAN Setup

Use this menu option to configure an ISP connection. ADSL employs Asynchronous Transfer Mode (ATM) protocol to send data to the Internet Service Providers. An ATM circuit uses Permanent Virtual Circuit (PVC) as pathway to identify and route modem data. The U.S. Robotics Ethernet/USB Router supports multiple PVC connections for multiple ISPs.

To configure a PVC...

1. Delete any connection that you don't need.
  2. Select the PVC in the Current ATM PVC List.
  3. Click **Delete**.
  4. Click the connection type recommended by your ISP. Choose a mode: RFC1483 Bridged, RFC1483 Routed, PPPoE, PPPoA or MER.
- If you chose RFC1483 Bridged mode, follow these steps...
    1. Enter VPI / VCI values.
    2. Click the radio button for the desired encapsulation mode: LLC/SNAP or VC Multiplexing.
    3. Network Settings: Be sure that options Enable NAPT and Enable DHCP are not selected.
    4. Click **Add**.
  - If you chose RFC1483 Routed mode, follow these steps...
    1. Enter the WAN IP Address for your ISP.
    2. Enter the WAN Subnet Mask for your ISP.

3. Enter VPI / VCI values.
4. Click the radio button for the desired encapsulation mode: LLC/SNAP or VC Multiplexing.
5. Network Settings: Be sure that options Enable NAPT and Enable DHCP remain selected.
6. Click **Add**.

- If you chose PPPoE mode, follow these steps...

1. Enter Username and Password.
2. Select "Direct" Dialing mode. Only choose "Auto" if you prefer to start and stop your connection while data is flowing.
3. Enter the IDLE Timeout: This function adjusts the number of minutes of no traffic before the connection terminates. The idle timeout connection terminates when you select "Auto" Dialing Mode.
4. Select the Authentication method: Chap or PAP or MS-CHAP.
5. Enter VPI / VCI values.
6. Click the radio button for the desired encapsulation mode: LLC/SNAP or VC Multiplexing.
7. Network Settings: Be sure that options Enable NAPT and Enable DHCP remain selected.
8. Click **Add**.

- If you chose PPPoA mode, follow these steps...

1. Enter Username and Password.
2. Select the Authentication method: Chap or PAP or MS-CHAP.
3. Enter VPI / VCI values.
4. Click the radio button for the desired encapsulation mode: LLC/SNAP or VC Multiplexing.
5. Network Settings: Be sure that options Enable NAPT and Enable DHCP remain selected.
6. Click **Add**.

- If you chose MER mode, follow these steps...

1. Enter the WAN IP Address for your ISP.
2. Enter WAN Subnet Mask for your ISP.
3. Enter VPI / VCI values.
4. Click the radio button for the desired encapsulation mode: LLC/SNAP or VC Multiplexing.
5. Network Settings: Be sure that options Enable NAPT and Enable DHCP remain selected.
6. Click **Add**.

Proceed to the Tools Menu to save your changes.





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## ADSL Standard

The ADSL Standard menu configures the ADSL protocol. You'll find four supported protocols: Multi-mode, T1.413, G.dmt and G.lite. Your ISP determines the protocol to use. In most cases, Multi-mode should allow a connection to the ISP.



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## PPPoE Relay

PPPoE Relay protocol supports multiple PPPoE sessions through the router, on a LAN interface, over an RFC1483 Bridged PVC. The router supports multiple sessions by maintaining a mapping table. In this table, each entry represents one session. The Client /

Server side MAC address and the Session Id provide the basis for the mapping. Refer to WAN setup instructions on configuring PPPoE. The PPPoE Relay option requires an ATM PVC (server) and a LAN interface (client). The client initiates a PPPoE session with the server via a third-party PPPoE client. Follow these steps...

1. Configure the client and server.
2. Click **Enable** to start the relay function.



### NAPT Bridge

This screen provides the option of enabling or disabling MER PVC. From this screen, you can also change this PVC's ATM values. The MER Interface is an RFC1483 Bridged PVC, terminated in the router with a static public address. The ISP provides the static public address. This type PVC operates with Network Address Translation (NAT) and DHCP. These protocols allow the router to serve LAN users with private addresses.





## Bridging

You can group router LAN interfaces. Grouping allows forwarding of their Ethernet frames to an ATM interface. The U.S. Robotics Ethernet/USB Router defaults to bridging on three ports: ETH1, ETH2 and USB. The router bridges these ports to the atm0 interface or the first PVC under WAN SETUP.

To change the grouping...

1. Click **Erase All**.
2. Click **Interfaces**. Choose the desired LAN Interfaces.
3. Click **Apply**.



To bind the LAN Interfaces to an ATM interface, select “Add Bridge.”

1. Select the ATM Interface from the Interface Name drop-down list.
2. Enter the VPI / VCI to which this ATM circuit belongs. Refer to WAN Setup for information on setting up a bridged PVC.
3. Click **Apply**.
4. At the List of Bridge Entries, click **Enable**. This action activates packet forwarding.



## Advanced

Use the Advanced Interface menu to configure LAN, PPP and ATM interfaces. Follow these steps...

1. Select the Interface Name.
2. Set the IP and Subnet Mask by clicking **Configure Interface**. Some interfaces allow the option of changing interface status.

#### Interfaces:

- **Interface mer0** usage is reserved. Its status is always **Down**.
- **Interface ADSL0** is the ADSL SNMP interface.
- **Interface lo0** is the loopback interface. When you perform an OAM loopback, the status field displays UP.
- **Interfaces Atm0 to Atm 7** display the interfaces configured for RFC1483 bridged mode or RFC 1483 routed mode.
- **Interfaces pppo to ppp7** display the interfaces configured for PPPoE or PPPoA.

#### Parameters:

- **Dynamic IP address from DHCP:** Selecting this option allows the DHCP Server to assign the IP address.
- **Static IP address:** Selects the IP address to be statically assigned.
- **Interface:** The name of the selected interface.
- **IP address:** The IP address of the selected interface.
- **Subnet Mask:** The subnet mask of the selected interface.
- **MTU:** Sets the maximum transmission unit of the interface. The MTU limits the size of packets that transmit on an interface. Not all interfaces support the MTU parameter. Some interfaces, like Ethernet, have range restrictions (80 - 1500).
- **Speed:** Auto, 10 Mbps, or 100 Mbps.
- **State:** Enable and Disable. When you set an interface to **Disable**, the system won't attempt to transmit messages through that interface. When you set an interface to **Enable**, you can transmit messages through the interface.



Use the Advance–VCC menu to add and delete ISP connections. This menu also includes options to enter ATM Quality of Service (Qos) parameters. The Advance–VCC menu operates similarly to the WAN Setup menu.

The menu only supports Data type ATM circuits.

To list the Quality of Service setting per PVC, click the **Show QOS Settings** button.

#### ***Advance–VCC Menu Add Parameters***

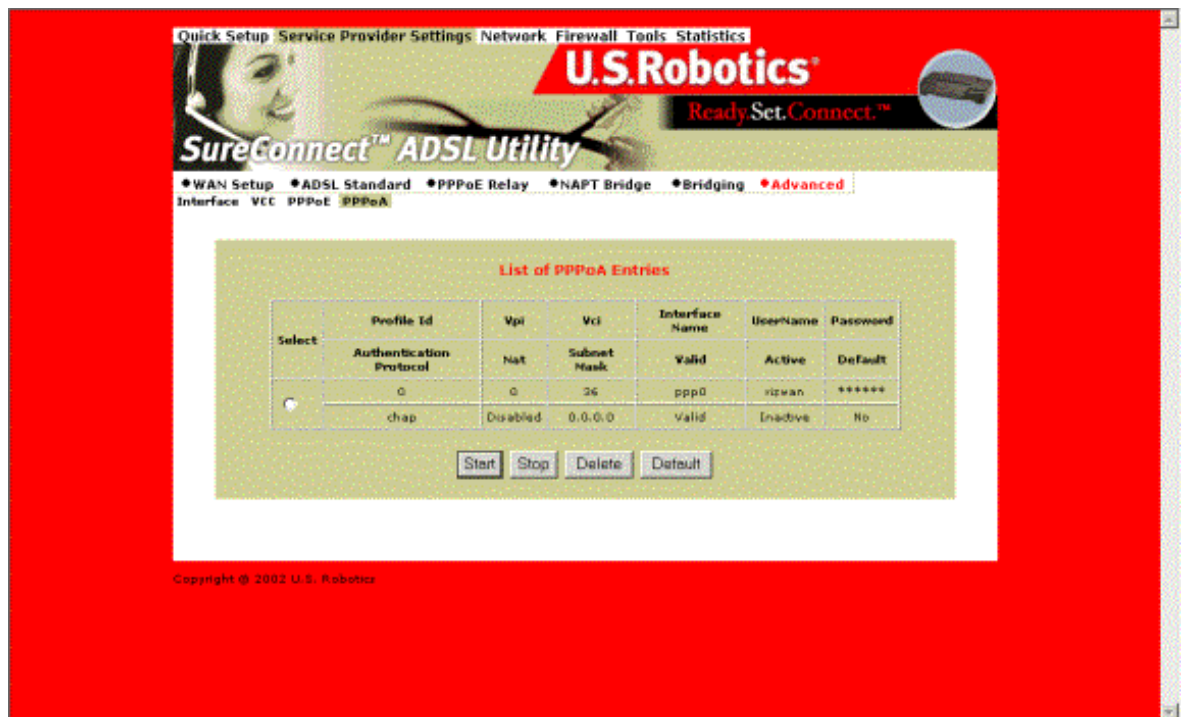
Parameter	Definition
<b>VPI</b>	Virtual Path Identifier (VPI) that identifies the ATM connection. The vpi is an integer that ranges from 0 to 4,095.
<b>VCI</b>	Virtual Channel Identifier (VCI) that identifies the ATM connection. The VCI is an integer that ranges from 0 to 65,535.
<b>Peak Cell Rate</b> (Cells/sec)	Maximum rate for sending cells to the network.
<b>Average Cell Rate</b> (Cells/sec)	Maximum sustainable or average rate for sending cells to the network. Average Cell Rate specifies bandwidth utilization. This value must always be less than or equal to Peak Cell Rate.
<b>Burst Size</b> (cells)	Maximum number of cells that the user can send at peak rate in a burst. We measure burst size from within a sustainable rate.
<b>CDVT</b> (cells)	Constrains the number of cells the user can send to the network at the maximum line rate.

Type	Only data support – NO voice.
<b>Service Type</b> <b>cbr</b> Constant Bit Rate	Supports real-time applications that require a fixed amount of bandwidth. These applications, such as a video stream, produce data at regular intervals. The user can specify how much bandwidth that he wishes to reserve.
<b>rtvbr</b> Real Time Variable Bit Rate	Supports time-sensitive applications such as voice. Varies the rate at which cells arrive.
<b>Nrtvbr</b> Non Real Time Variable Bit Rate:	Supports applications that have no constraints on delay and delay variation, but still have variable-rate and bursty traffic characteristics.
<b>Ubr</b> Unspecified Bit Rate	Best effort service that does not require tightly constrained delay and delay variation. UBR provides no specific quality of service or guaranteed throughput.



**Advance–PPPOE.** Use Advance–PPPoE to connect to, or disconnect from a PPPoE server. Click **Start** to use the connection. Click **Stop** to disconnect. The menu also includes two other button options. Click **Default** to make the ISP connection your default connection. Click **Delete** to delete the connection.





**Advance–PPPOA.** Use Advance–PPPoA to connect to, or disconnect from a PPPoA server. Click **Start** to use the connection. Click **Stop** to disconnect. The menu also includes two other button options. Click **Default** to make the ISP connection your default connection. Click **Delete** to delete the connection.

## Network Setting Page



### LAN Setup



Use LAN Setup to set the router's IP Address and Subnet Mask. The LAN IP address allows you to connect the router to your LAN. This address also allows you to manage the router from your LAN. A LAN (Local Area Network) connects computers in the same building or area.

Subnet masks split one network into a set of mini networks or subnets. Subnetting helps to reduce traffic on each subnet. Subnetting also makes the network more manageable. Each subnet functions as if it were an independent network.

To set up the LAN...

1. Enter the LAN IP Address for the router to use on the network.
2. Enter the Subnet Mask for the network that the router connects to.
3. Click **Apply**.

**NOTICE.** The LAN setup process changes the IP address of the Web User Interface. The apply action causes the router to save your current configuration and then restart. After the router restarts, you'll have to reapply to the Web User Interface using a new IP address.



## DHCP

DHCP stands for Dynamic Host Configuration Protocol. This protocol dynamically assigns

IP addresses and related information to Local Area Network (LAN) nodes. For temporarily connected network users, DHCP provides safe, reliable, and simple TCP/IP network configuration.

The top DHCP menu screen lists DHCP server entries. To remove the entry...

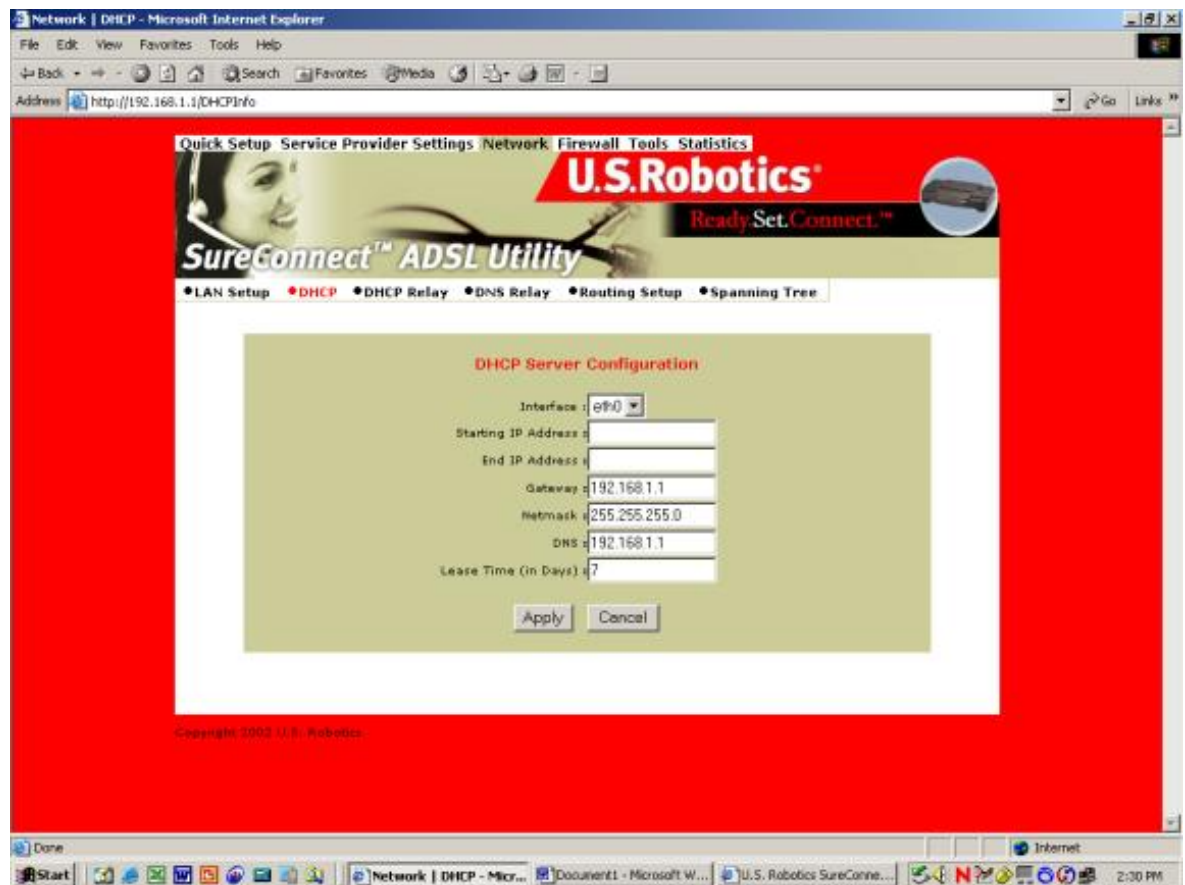
1. Click the radio button beside the entry.
2. Click **Delete**.

You can also start or stop the DHCP server by clicking **Start/Stop**.

To create a new DHCP server entry, click **Add**.

**Note:** Before adding a new DHCP server entry, you must first stop the DHCP server.

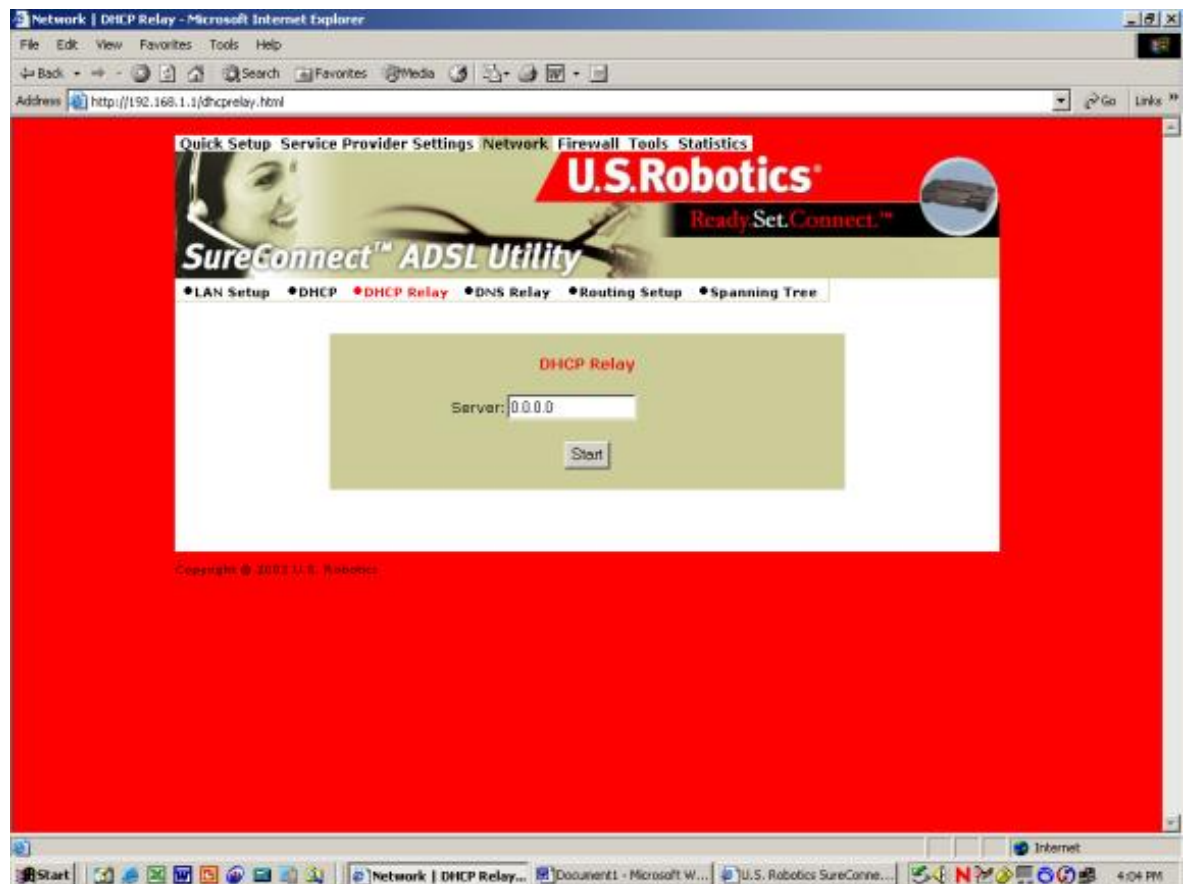
The following screen appears:



Configure the following parameters:

- **Interface.** LAN port that the DHCP server will support.
- **Starting IP Address.** First IP address in a block of addresses. The DHCP server uses this address in responding to a LAN port node's DHCP request.
- **End IP Address.** Last IP address in a block of addresses. The DHCP server uses this address in responding to a LAN port node's DHCP request.

- Gateway.** IP address of the Default Gateway or Router that the node will use.
- Netmask.** Subnet Mask for the LAN that the node will be on.
- DNS.** Domain Name Server. The DNS that the node will use. DNS is a server with a database. The database translates a domain name into a corresponding IP address. For example, “USR.com” resolves into IP address 231.222.320.4. Communications over the LAN between the node and USR.com web site use this address.
- Lease Time.** Number of days that the node can use a DHCP lease. Subsequently, you must renew the lease with the DHCP server.



## DHCP Relay

Suppose that a Dynamic Host Configuration Protocol (DHCP) server resides on a different LAN than the node broadcasting for DHCP service. Then the DHCP broadcast request must be forwarded across the router/WAN to a subnet where a DHCP server resides. The router must relay the DHCP request. DHCP relay assures that the requesting node receives an IP address that corresponds to the node's subnet. The router must have a record of the DHCP server's IP address. With this address, the router can correctly direct the request to the appropriate DHCP server.

After you input the IP address into the menu, start the relay agent by clicking **Start**.



### DNS Relay

The DNS Relay function supports forwarding of DNS requests from a LAN node to a known DNS server.

•**Domain Name.** Internet site address that the router is a group of (i.e. usr.com).

•**Primary DNS Server.** IP address of the Primary DNS that the router will use. Domain Name Server (DNS) is a server with a database. This server translates a domain name into the corresponding IP address. For example, USR.com resolves into IP address 231.222.320.4. Communications over the LAN between the node and web site USR.com use this address.

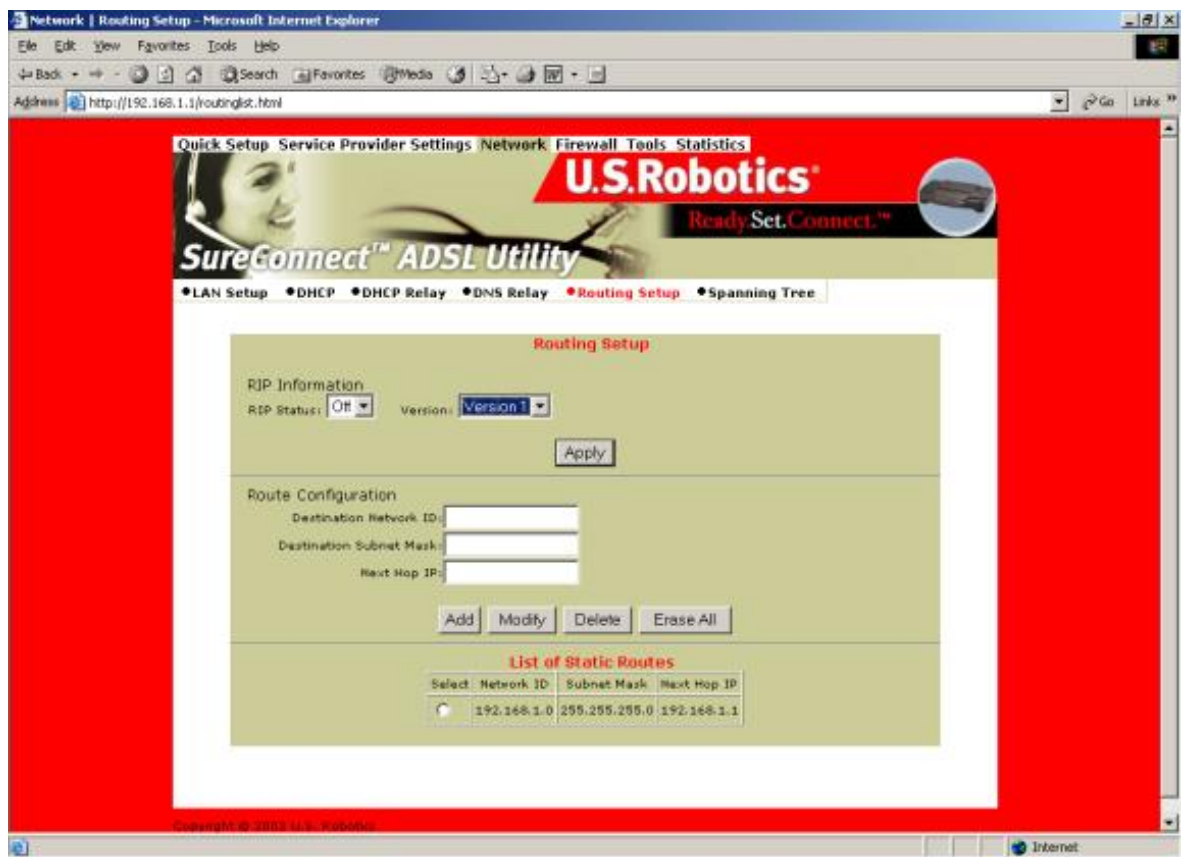
•**Secondary DNS Server.** IP address of the Secondary DNS that the router will use.

•**Gateway.** IP address of the Default Gateway the Router is to use.

•**DNS Relay.** Enabling or Disabling router ability to convey a DNS request from a LAN node.

To save and install DNS relay data...

1. Input the data.
2. Click **Apply**.



## Routing Setup

A router forwards data packets between local area networks (LANs) or wide area networks (WANs). Based on routing tables and routing protocols, routers read the network address in each transmitted packet. Routers then decide where to send the packet. A router bases this decision on the best route. The Routing Setup menu allows the user to configure how the router forwards received IP packets.

### RIP Information

Routing Information Protocol (RIP) is a routing protocol and is part of the TCP/IP suite. RIP determines a route based on the smallest hop count between source and destination. RIP determines the smallest hop count by communicating with other routers within the network. Only use RIP if the target router also utilizes RIP.

•**RIP Status**=On/Off selection.

•**Version**= Version 1 (RIP1) or Version 2 (RIP2). Should match RIP versions used by other routers in the network.

To save and install RIP data...

1. Input the data.
2. Click **Apply**.

### Route Configuration

Use the Routing Setup area to add, delete or modify static routes. Static routes are

permanent routes that the router stores. The router uses these routes when determining where to forward IP packets that it receives.

- Destination Network ID.** IP address of the network that you're defining in the table.

- Destination Subnet Mask.** Network Subnet Mask of the defined entry in the table.

- Next Hop IP.** IP address of the next router that will forward packets to the destination network.

- Add.** Add information to the routing table.

- Modify.** Modifies an entry. To modify an entry...

1. From the List of Static Routes, select the route to modify. To do that, click **Select** next to the route you're modifying.
2. Then click **Modify**.

- Delete.** Used to delete an existing entry. To delete...

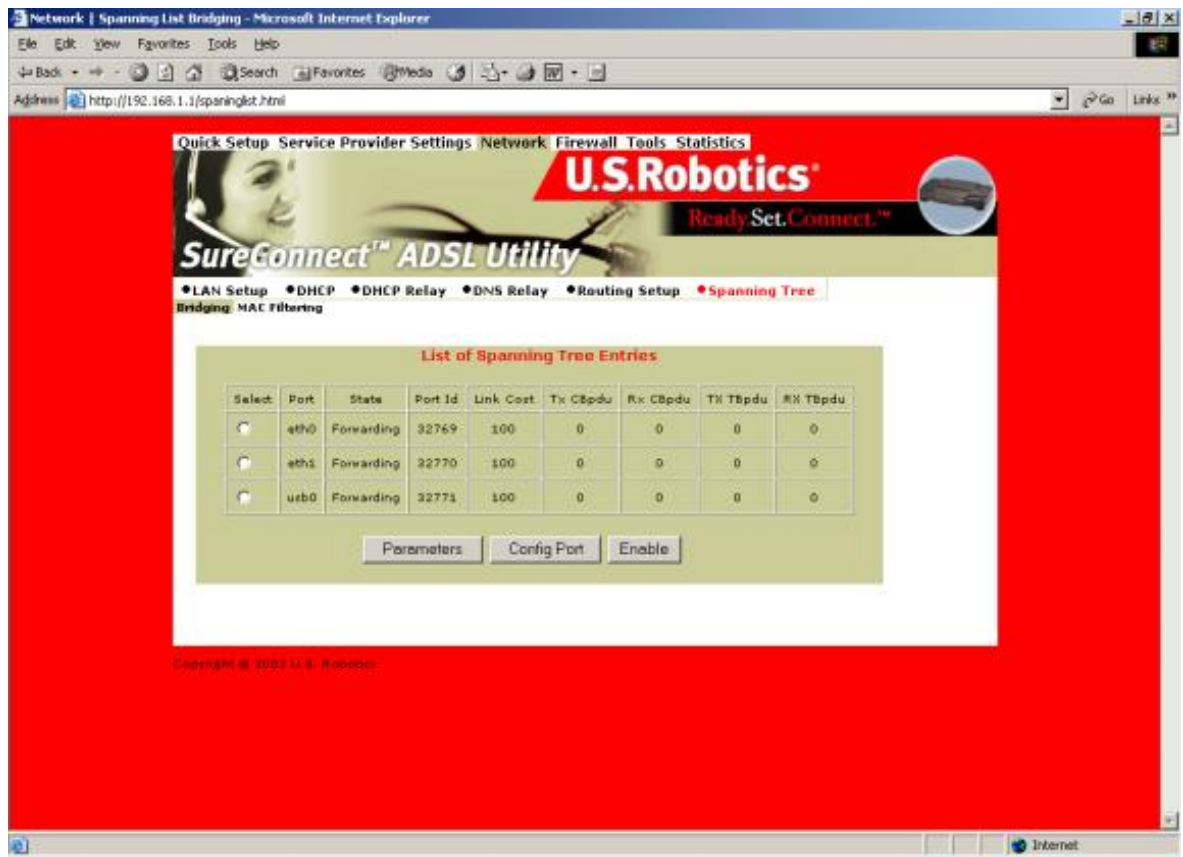
1. Select the route to modify from the List of Static Routes. Do that by clicking **Select** next to the route you're deleting.
2. Click **Delete**.

- Erase All.** Erases all routes in the List of Static Routes. This feature won't erase networks defined on interfaces of the router.

### List of Static Routes

The list of networks known by the router. The list also includes the Next Hop to get to these networks. Static routes may be networks added statically or learned from other networks.





## Spanning Tree-Bridging

Transparent bridges use the spanning tree algorithm to dynamically determine the best source-to- destination path. This algorithm avoids bridge loops (multiple paths linking one segment to another) within a network. The algorithm determines all redundant paths and makes only one of them active. The spanning tree protocol (STP) is part of the IEEE 802.1d standard.

### List of Spanning Tree Entries

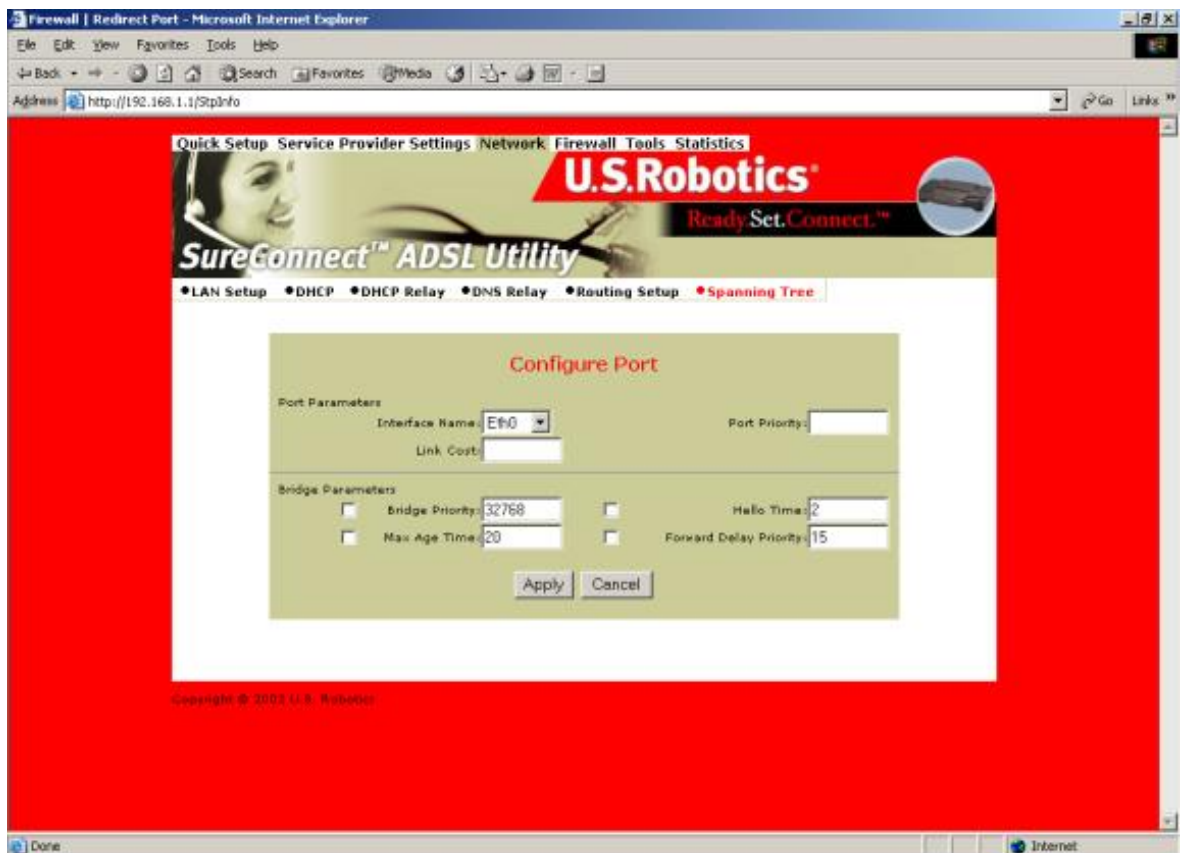
List all known router bridging ports and their current state.

To view the current state of the spanning tree bridge click **Parameters**. The following screen appears...



To close the screen, click **Continue**.

To configure a port, click **Config Port**. The following screen appears...



## Port Parameters

- **Interface Name.** Router interface to be configured for spanning tree.
- **Link Cost.** Cost associated with that interface. Based on this cost, the bridge decides which link to forward data over. The options range from 0 to 65,535.
- **Port Priority.** Determines which port becomes the root port. Options range from 0 to 255.

## Bridge Parameters

- **Bridge Priority.** Determines which bridge becomes the root bridge. Options range from 0 to 65,000.
- **Max Age Time.** All bridges in the bridged LAN use this timeout value. The root sets Max Age value. Options range from 1 to 60 seconds.
- **Hello Time.** Time interval between generations of configuration BPDUs (Bridge Protocol Data Units). The root generates configuration BPDUs. Options range from 1 to 10 seconds.
- **Forward Delay Time.** All bridges in the bridged LAN use this timeout value. The root sets the forward delay value. Options range from 1 to 200 seconds.

To configure port information...

1. Input the information.
2. Click **Apply**.



## Spanning Tree - MAC Filters

The MAC address is a unique serial number burned into Ethernet adapters. This address distinguishes the network card from others. MAC Filters allow or reject WAN access for specific machines.

•**List of MAC Address Filters.** Known MAC addresses and the ports on which the router learned the addresses.

To view current filter states, click **Parameters**. The following screen appears...



To close the screen, click **OK**.

To add a static MAC address to the table, click **Add**. The following screen appears...



•**MAC Address.** Static MAC address to add to the table.

•**Frame.** What the router should do with a data frame from this MAC address. The options are Forward or Drop.

To set the Add/Modify Filter information...

1. Input the information.
2. Click **Apply**.

To delete an entry from the List of MAC Address Filters...

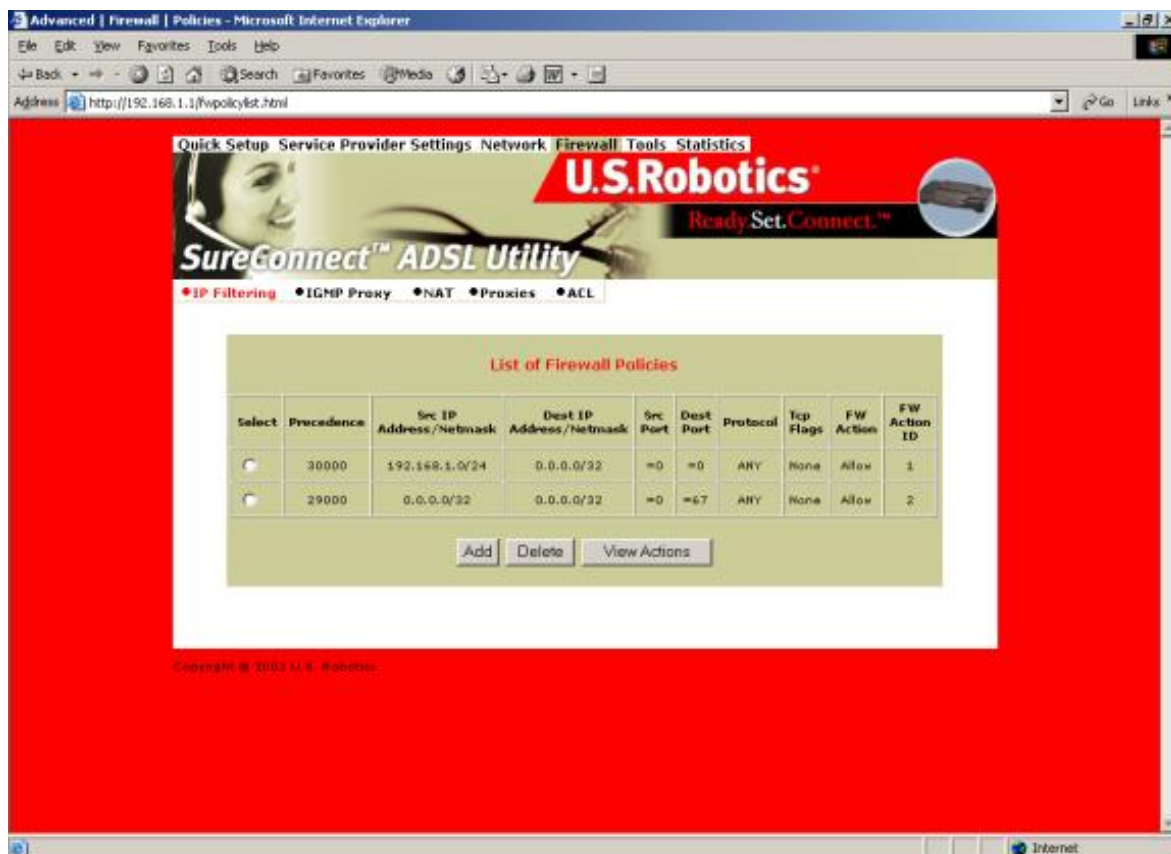
1. Check the radio button to the left of the entry.
2. Click **Delete**.

To modify a MAC address in the List of MAC Address Filters, or to make the address static...

1. Check the radio button beside the entry.
2. Click **Modify**.
3. Proceed by following the same steps as in **Add**.

To erase all non-static MAC addresses, click **Erase All**.

## Firewall Settings Page



## IP Filtering

Click the IP Filtering header and view the List of Firewall Policies. The firewall's factory-default setting is "Deny All." The router includes factory-configured policies that allow access from LAN to WAN.

### List of Firewall Policies

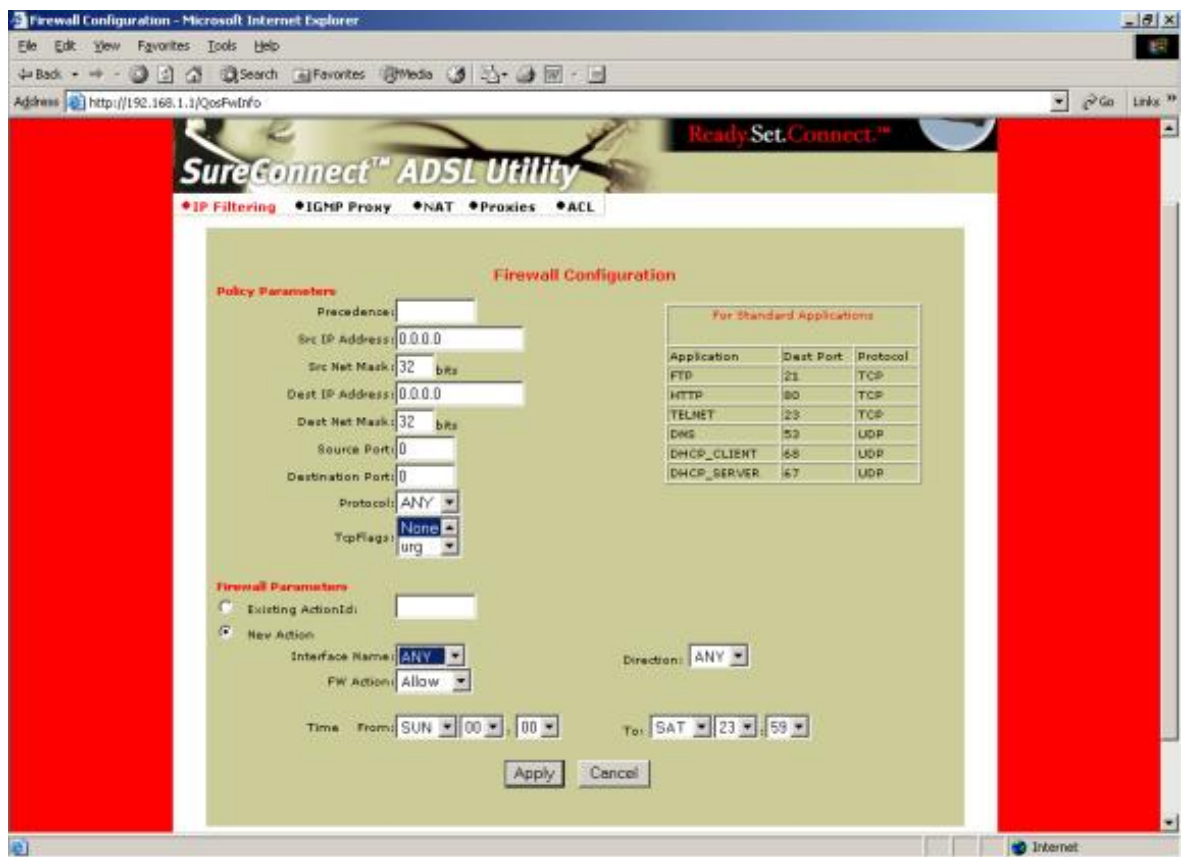
This screen displays the current list of firewall policies as defined in the router. The list appears in table form.

To remove an entry...

1. Click the radio button beside the entry.
2. Click **Delete**.

To add new policies, click **Add**. The following screen appears:





### Policy Parameters

On the Firewall Configuration page, notice the header “Policy Parameters.” The Policy Parameters menu presents you with the following onscreen options ...

- **Precedence.** Priority of the policy that you’re creating. Options range from 0 to 65,535. The lower precedence number takes priority.
- **Src IP Address.** Data source. Enter either a specific IP address or network address.
- **Src Net Mask.** Subnet Mask for the data’s network source. Options range from /12 (255.240.0.0) to /32 (255.255.255.255).
- **Dest IP Address.** Data destination. Enter either a specific IP address or network address.
- **Dest Net Mask.** Subnet Mask for the data’s network destination. Options range from /12 (255.240.0.0) to /32 (255.255.255.255).

- **Source Port.** Transport layer source port. Options range from 0 to 65,535.
- **Destination Port.** Transport layer destination port. Options range from 0 to 65,535.
- **Protocol.** IP protocols to be filtered. Options are: Any (all), TCP, UDP, ICMP, AH, ESP.
- **TCP Flags.** Filtering of the TCP Flags that control session setup and termination. Options are: None, urg (Urgent), ack (acknowledgement), psh (push), rst (reset), syn (synchronize), fin (finished).

### Firewall Parameters

To edit a firewall parameter...

1. Click the radio button beside “**Existing ActionID.**”
2. Enter the “**FW Action ID**” to modify.

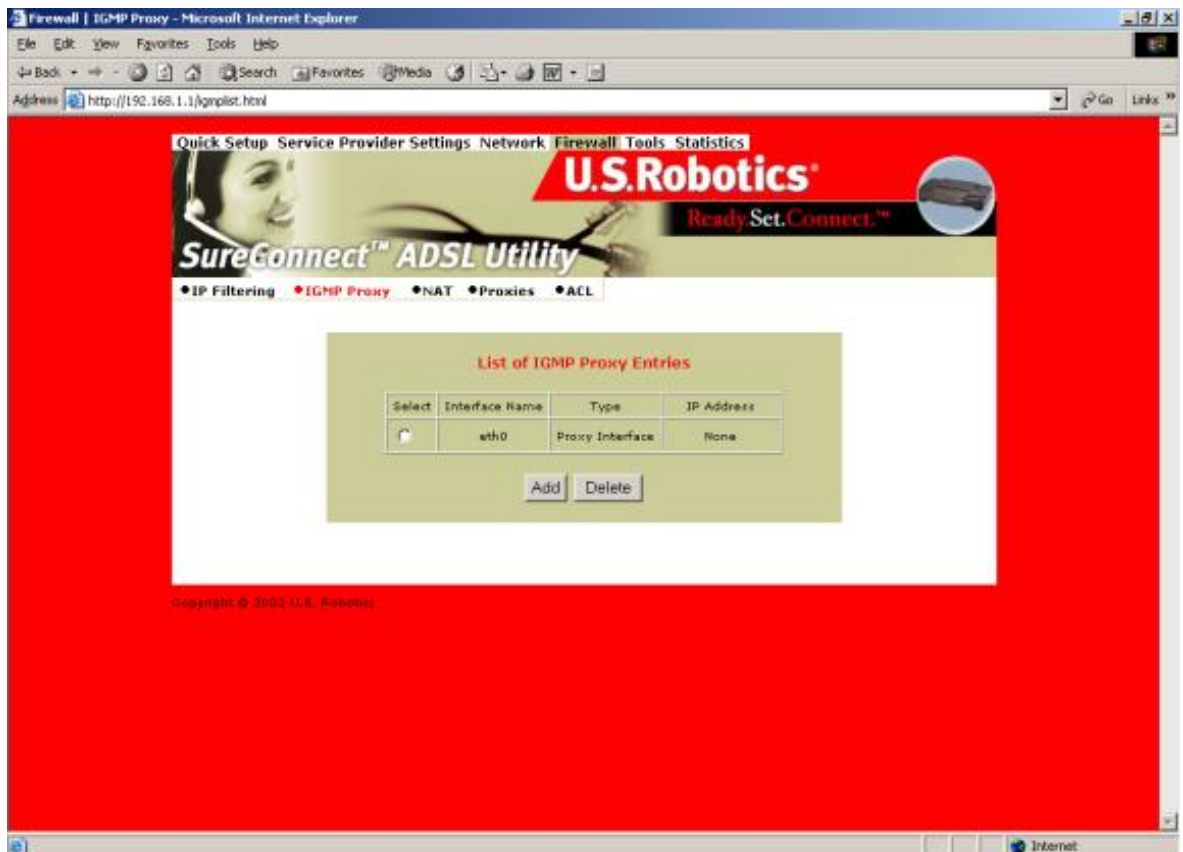
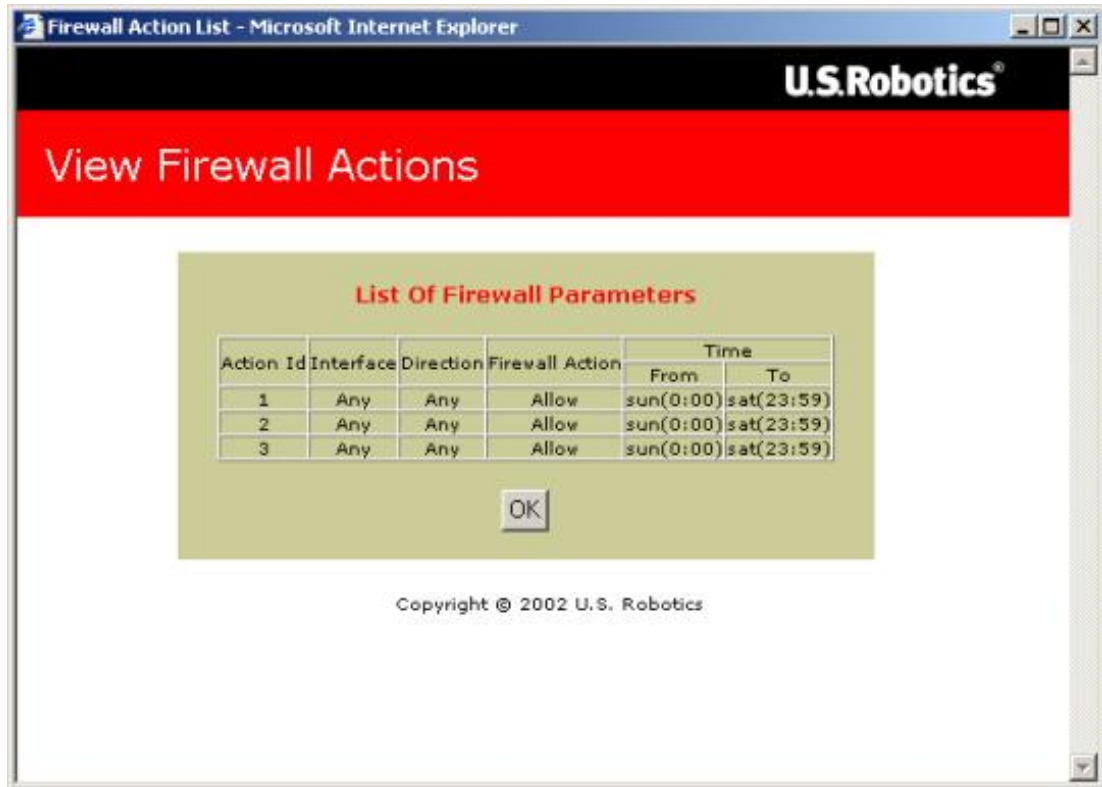
To create a new firewall parameter, Click the radio button beside “**New Action.**” The screen presents you with a number of options and sub-options...

- **Interface Name.** Name of the Interface to apply the parameter to.
- **FW Action.** How the system handles packets. Your sub-options include...
  - § **Allow.** Permits packets to enter or leave the system.
  - § **Reset.** Forces the TCP connection to reset.
  - § **Reject.** Drops the packet and issues an “unreach host” ICMP error.
  - § **Deny.** Drops the packet.
- **Direction.** Specifies whether the action applies to incoming, outgoing, or both incoming and outgoing traffic. Options are: Any, In, Out.
- **Time.** The parameter applies during the time period that you specify. Click the start (**From**) day, time and stop (**To**) day and time.

To save and install firewall configuration data...

1. Input the data.
2. Click **Apply**.

- **NOTICE.** Check your firewall configuration data. See **View Actions** at the top menu. There, you'll find a selection **List of Firewall Policies**. This selection summarizes the action that you entered for each parameter. When you click **View Actions**, the following screen appears.



## IGMP Proxy

Click the IGMP Proxy radio button and view the List of IGMP Proxy Entries.

### List of IGMP Proxy Entries

This screen displays a list of IGMP Proxy entries.

IGMP (Internet Group Membership Protocol) is a protocol. IP hosts use IGMP to report their multicast group memberships to immediately nearest routers.

To remove an entry...

1. Click the radio button beside the entry.
2. Click **Delete**.

To create a new IGMP Proxy entry, click **Add**. The IGMP Proxy Configuration screen appears...



### IGMP Proxy Configuration

On the IGMP Proxy configuration Screen, follow these steps to set up your IGMP proxy...

1. Select Proxy interface, router interface, or both: Check the box next to the interface.
2. Use the pull-down menu to the right to select the eth, usb, atm, or ppp Interface.

To save and install IGMP Proxy Configuration data...

1. Input the data.
2. Click **Apply**.



### NAT=>List of Static WAN Addresses

From the List of Static Wan Addresses menu, you can remove or add entries. To remove an entry...

1. Click the radio button beside the entry.
2. Click **Delete**.

To create a new Static WAN Address entry, click **Add**. The Static WAN Address Configuration screen appears...



## NAT=>Static WAN Address Configuration

**Public IP Address.** Public IP address that the router uses when translating network addresses.

To save and install Static WAN Address Configuration data...

1. Input the data.
2. Click **Apply**.





### NAT=>Port Range Mapping

Click the NAT header and view the List of Port Range Entries. NAT port range mapping allows the router to map public addresses and ports to private addresses and ports.

### List of Port Range Entries

NAT stands for Network Address Translation. NAT enhances the power of Port Range Mapping. Together, they can map a local IP address and port to a public IP address and port.

To remove an entry...

1. Click the radio button beside the entry.
2. Click **Delete**.

To create a new Port Range entry: Click **Add** on the top screen. The Port Range Configuration screen appears...



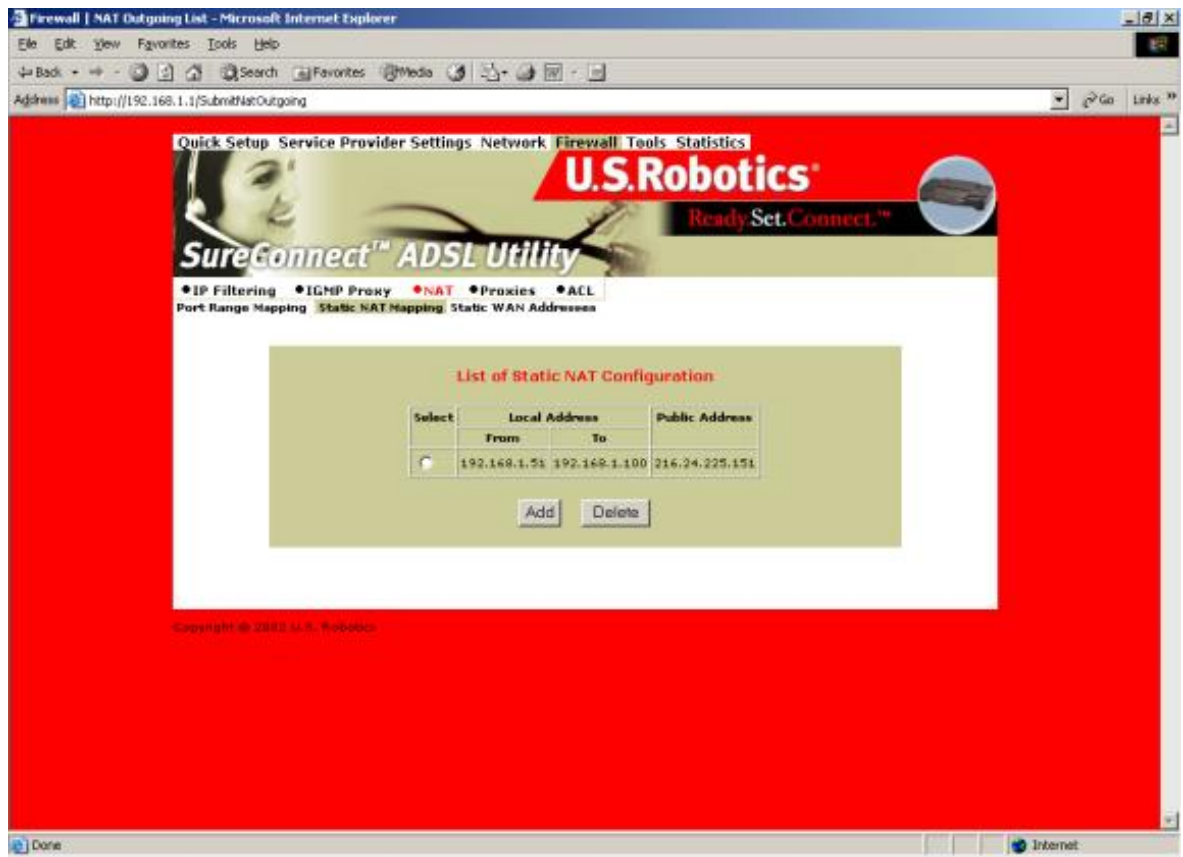
### NAT=>Port Range Configuration

To add a Static NAT entry, set the following parameters...

- **Public Address.** Set the public, destination IP address inside a packet header. The router will map or redirect packets with the address that you specify.
- **Public Port From.** Set the first (From) port of the public address that the router maps or redirects. Options range from 1 to 65,535.
- **Public Port To.** Set the last (To) port of the public address that the router maps or redirects. Options range from 1 to 65,535.
- **Local Address.** Set the IP address of a machine on the local LAN. The router directs packets to this address.
- **Local Port From.** Set the first (From) port of the local address that the router uses. Options range from 1 to 65,535.
- **Local Port To.** Set the last (To) port of the local address that the router uses. Options range from 1 to 65,535.
- **Protocol.** Set protocol. Your protocol setting applies to the other parameters on this page. Your options are TCP or UDP port numbers.

To save and install Port Range Configuration data...

1. Input the data.
2. Click **Apply**.



### NAT=>Static NAT Mapping

Static Network Address Translation (NAT) maps multiple local IP addresses to a public IP address.

#### List of Static NAT Configuration

From the List of Static NAT Configuration menu, you can remove or add static NAT entries. To remove a entry...

1. Click the radio button beside the entry.
2. Click **Delete**.

To create a new Static NAT Configuration entry, click **Add**. The Static NAT Configuration screen appears...



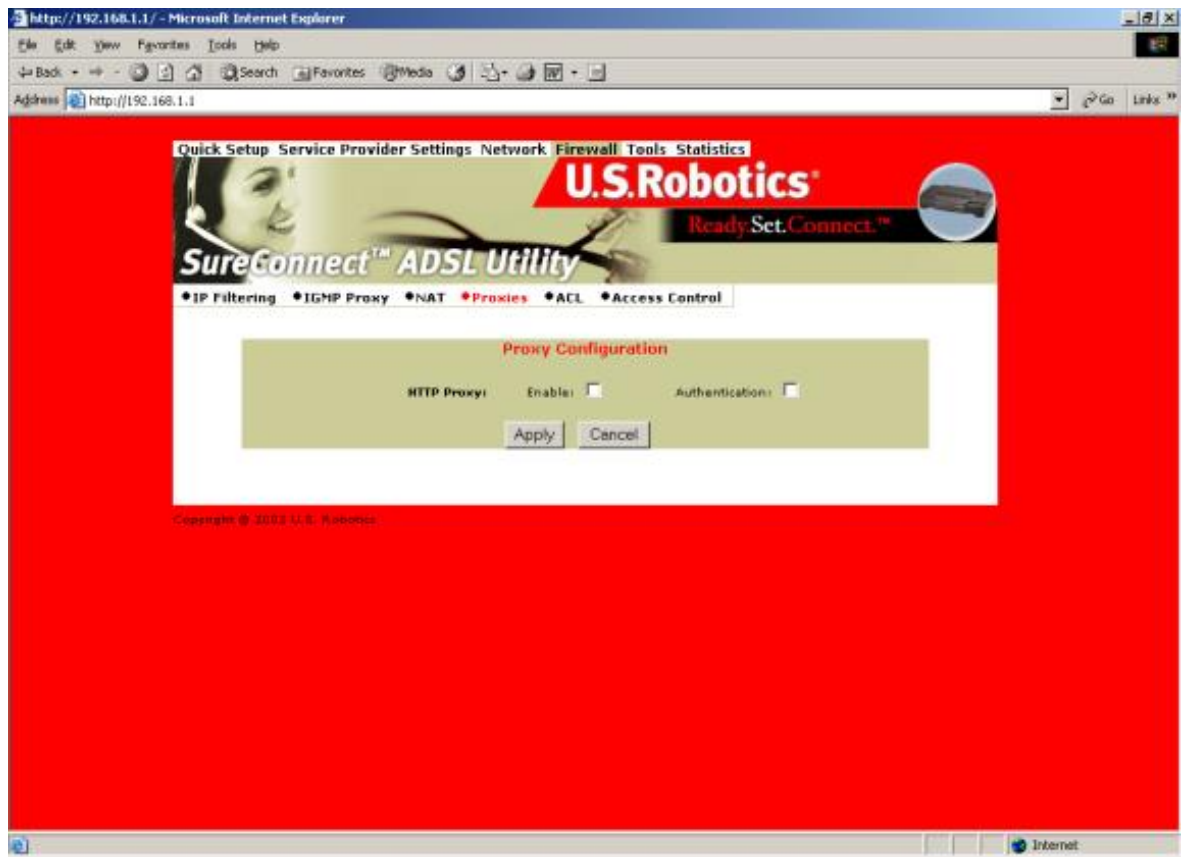
### NAT=>Static NAT Configuration

To add a Static NAT entry, set the following parameters...

- **Local Address From.** First address in a range of local IP addresses. The router maps these addresses to the public IP address.
- **Local Address To.** Last address in a range of local IP addresses. The router maps these addresses to the public IP address.
- **NAT Public Address.** Public address. The router maps local addresses to this public address.

To save and install Static NAT Configuration data...

1. Input the data.
2. Click **Apply**.



### Proxy Configuration

Proxy Services are specialized application programs. These programs accept users' requests from LAN clients for Internet services like HTTP. On behalf of LAN clients, proxy services also set up connections to WAN servers. A proxy server authenticates against the user database (**Access Control**). The proxy server filters a request against the Access Control List (**ACL**). Then the server forwards the request to actual services. Proxy Servers are application specific. Each application needs its own proxy server.

To save and install proxy configuration data...

1. Click the radio button beside the HTTP proxy that you want to enable. (The illustration above doesn't show proxy radio buttons.)
2. Click **Enable** beside **HTTP Proxy**.
3. Click **Authentication**. Clicking this box authenticates the user during the HTTP Proxy.
4. Click **Apply**.



### ACL (Access Control List)

The ACL List screen displays currently configured Access Control Lists (ACL).

To remove an ACL List entry...

1. Click the radio button beside the entry.
2. Click **Delete**.

To create a new ACL entry, click **Add** from the top screen. The following screen appears...





### ***Proxy Parameters***

Term	Definition
Port	Proxy port.
Priority	Priority of the policy you're creating. Options range from 0 to 65,535.
User Name	A configured user in the router's internal database. You must configure users through the Access Control Menu.
Application Type	HTTP application file type (MIME) to filter or proxy. Options are... •application (all), •image (all), •video (all), •audio (all), •application/octet-stream, •audio/x-wav, •audio/x-mpeg, •image/jpeg, •video/mpeg.
Destination Address	Destination IP address of the FTP or HTTP server on the WAN.
Source Range	Local IP address range that the rule applies to. "From" is the first IP address in the range. "To" is the last IP address in the range.
Domain Name	Address of an Internet site to filter.
Day From/To	Set the effective start (From) day and time for the policy. Set the effective stop (To) day and time for the policy.

Action	Specifies how the ACL deals with requests to the policy. Options are Allow or Deny.
--------	---

To save and install Access List configuration data...

1. Input the data.
2. Click desired radio button options. The router only applies options that you select.
3. Click **Apply**.



## Access Control

**List of Users.** The List of Users allows you to delete or authorize user access privileges. To set up a new user account, you assign a username and password. With the username and password, you can open a new account with either administrative or ordinary privileges.

To delete a user account...

1. Click the radio button beside the user entry.
2. Click **Delete**.

To create a new user entry...

1. Click **Add** on the top-level, List of Users screen. The following screen appears...



## User Configuration

### *User Configuration Parameters*

User Account Data Term	Definition
Username	Configurable username with up to 19 characters.
Password	Configurable user password with up to 19 characters.
Services	Services available to the user. Options are CLI, HTTP, and FTP. To select all, perform a <SHIFT> right click. To make multiple selections, <CTRL> click on each selection.
Permissions	Administration access or Ordinary access.

To save and install User Configuration data...

1. See the table above. Input the user account data.
2. Click **Apply**.

To modify a User entry...

1. Click the radio button next to the user to be modified.
2. Click **Modify** from the top-level, List of Users screen. The following screen appears...



## User Modification

### *User Account Modification Parameters*

User Account Data Term	Definition
User Name & Authorization Old	User account that you're modifying. You can't change these settings.
Authorization	Select the new authorization level for this user. Your options are CLI, HTTP, and FTP. To select all, perform a <SHIFT> right click. To make multiple selections, <CTRL> click on each selection.
Permission	Select the new Permission level for this user. Choose Administration access or Ordinary access.

To save and install user account modification data...

1. Input user account modification data.
2. Click **Apply**.

To change a user's password,,,

1. Click the radio button next to the appropriate user account.
2. Click **Change Password** from the top-level, List of Users screen. The following

screen appears...



Change Password

*User Password Change Parameters*

Password Data Term	Definition
Old Password	Enter the user's old password.
New Password	Enter the user's new password.
Confirm New Password	Confirm a correct entry by reentering the user's new password.

To save and install User Modification Configuration data...

1. Input the data.
2. Click **Apply**.

Tools Page



## SNMP

Simple Network Management Protocol (SNMP) is a software component that resides in a network device. SNMP responds to requests for information and action from a network management station. Within the network device, an object-like format called a Management Information Base (MIB) stores the information exchanged during SNMP.

### SNMP=>System

The System function displays the SNMP parameter as assigned by the SNMP Administrator. Modify the default settings by following these steps...

1. Click **Modify**.
2. Enter your changes.
3. Click **Apply**.

•**NOTICE.** To stop the SNMP agent, click **Stop**. The **Stop** button toggles to become the **Start** button. After the process ends, you can start the agent by clicking **Start**. Configure the SNMP listening port by following these steps...

1. Click **Stop** to stop the agent.
2. Click **Configure SMNP Agent**.
3. Enter your changes.
4. Click **Apply**.
5. Restart the agent.





## SNMP=>Trap

Set the agent to report up or down status by following these steps...

1. Select the version of SNMP manager that the community is running.
2. Click **Modify**.
3. Enter the SNMP manager's IP address into its community name.
4. Select Enable for that status option.
5. Click **Apply**.



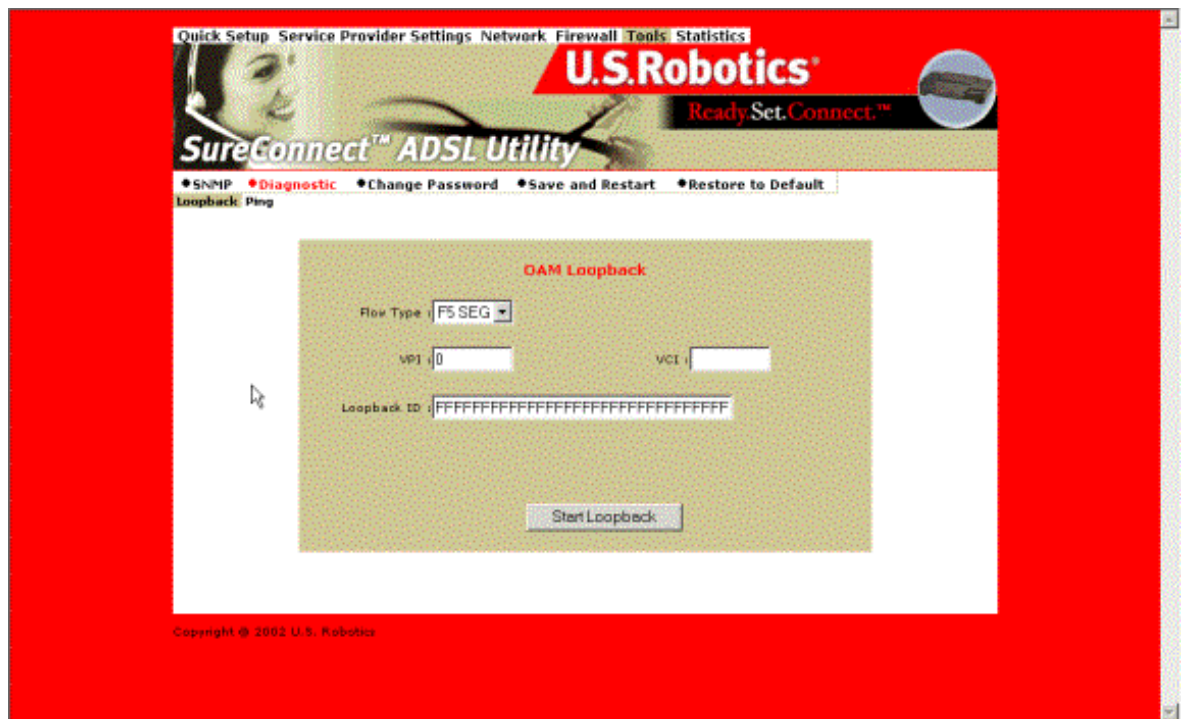
### SNMP=>Community

Set the SNMP manager's IP address and community name for SNMP message exchange by following these steps...

1. Click **Configure Community**.
2. Enter your changes.
3. Click **Apply**.

### Diagnostic

The Diagnostic feature can generate ATM or IP traffic for troubleshooting or testing your router's configuration. Sometimes the request for a response fails. The failure may be due to your ISP's disabling its equipment from responding to these requests. The ISP may disable responses for many reasons, including your security.



### Diagnostic=>OAM Loopback

OAM Loopback generates two forms of ATM frames for testing the integrity of your ATM circuit. F5 Segment (F5 SEG) frames transmit, but the ISP's ATM switch doesn't loop them back. F5 End-to-End (F5 ETE) frames transmit and the ISP's ATM switch replies.

To Start the OAM Loopback Test...

1. Select the frame type.
2. Enter an existing PVC (VPI/VCI) for the F5 ETE frames.
3. Enter the ATM switch loopback ID for the F5 ETE frames.
4. Click the Start Loopback to begin the test.
5. After the test completes, a screen reports results. Click **Back** to return to the **Diagnostic** screen.



### IP Address Ping Test

To Start the Address Ping Test...

1. Enter the IP of the network device that accepts ICMP packets.
2. Click **Ping**. If someone disabled ICMP packet forwarding on the device, the Ping will fail.

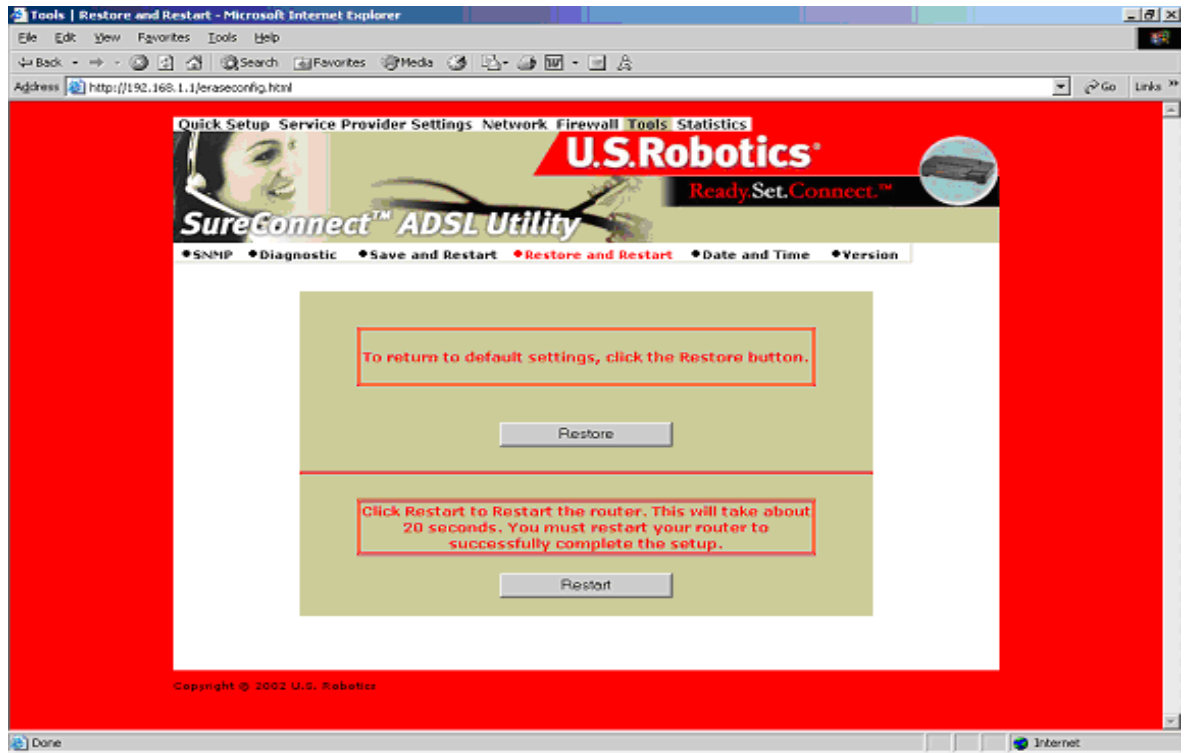


### Save and Restart

Whenever you make changes to the router's configuration, the router saves the changes in temporary memory storage. A power loss or power switch disconnection can cause the router to lose changes. To make permanent changes, save changes and restart the router.

After you click **Save**, the router returns to the Save and Restart screen. You may reboot your router by clicking **Restart**. Another way to reboot is to turn the router off and on from the router's power switch.

• **CAUTION.** The **Restart** button doesn't return you to the Save and Restart menu. You can return by either of two methods: Click the browser's **Back Arrow** key. Or reenter the router management IP address on your browser's address line.



### Restore and Restart

The Restore and Restart option returns the router's configuration to factory default settings.

• **CAUTION.** During restoration to default settings, the router loses all your changes. After the restoration process completes, you must reenter changes.

To erase the current router configuration...

1. Click **Restore**.
2. Click **Restart**.
3. Allow the router a few minutes to restore to factory settings.
4. Enter the router management IP address in the address line of your browser. The router main menu appears.



## Date and Time

To set the router's date and time input...

1. Key in your entry for the "Date" field. Use the format MM:DD:YYYY.
2. Key in your entry for the "Time" screen. Use the format HH:MM:SS.
3. Click **Apply**.





## Version

Click the Version option to see the router firmware version.

## Statistics Page



### ADSL Link Status

Displays ADSL line settings and connection status

Status Term	Meaning
ADSL Line Status	Displays the current ADSL line status
ADSL Standard	Displays the ADSL standard within the current configuration. The standards are: MULTI, T1.413, G.dmt, and G.Lite.
UpStream	Displays the upstream data rate, as negotiated by DSL link (Kb/s)
DownStream	Displays the downstream data rate, as negotiated by DSL link (Kb/s)
Attenuation	Displays the current attenuation in decibels
SNR Margin	Displays the current SNR margin in decibels
HEC Count	Displays the number of ATM cells received with errors since start of link.
Firmware	Displays the version number of the firmware
15 min ES Counter	Displays the number of errors per second for the current 15-minute period
CRC Errors	Displays the number of cyclical redundancy check errors per second since training
1 day ES Counter	Displays the number of errors per second for the current day

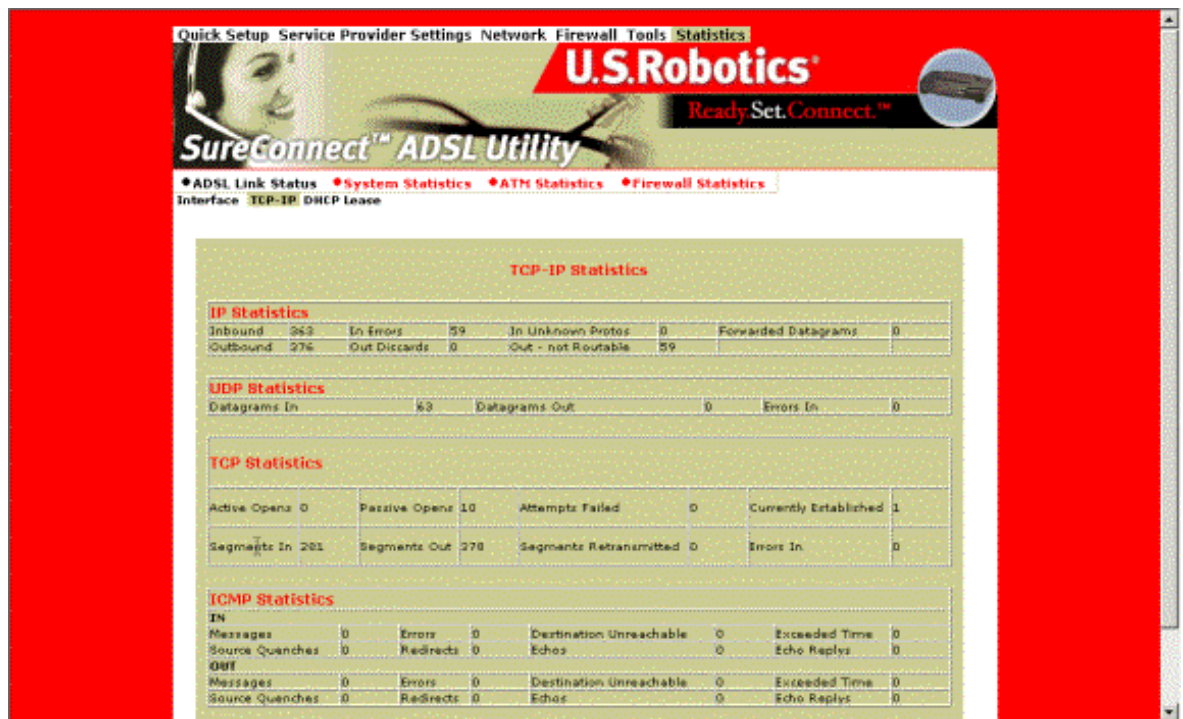
Interface Name	Admin Status	Octets In	Unicast PktsIn	Broadcast PktsIn	Discards In	Errors In	Octets Out	Unicast PktsOut	Broadcast PktsOut	Discards Out	Errors Out
eth0	UP	56127	392	0	0	0	274380	321	20	0	0
eth1	UP	0	0	0	0	0	0	0	0	0	0
mer0	UP	0	0	0	0	0	0	0	0	0	0
urb0	UP	0	0	0	0	0	0	0	0	0	0
lo0	DOWN	0	0	0	0	0	0	0	0	0	0
atm0	DOWN	0	0	0	0	0	0	0	0	0	0
atm1	DOWN	0	0	0	0	0	0	0	0	0	0
atm2	DOWN	0	0	0	0	0	0	0	0	0	0
atm3	DOWN	0	0	0	0	0	0	0	0	0	0
atm4	DOWN	0	0	0	0	0	0	0	0	0	0
atm5	DOWN	0	0	0	0	0	0	0	0	0	0
atm6	DOWN	0	0	0	0	0	0	0	0	0	0
atm7	DOWN	0	0	0	0	0	0	0	0	0	0
ppp0	DOWN	0	0	0	0	0	0	0	0	0	0
ppp1	DOWN	0	0	0	0	0	0	0	0	0	0
ppp2	DOWN	0	0	0	0	0	0	0	0	0	0
ppp3	DOWN	0	0	0	0	0	0	0	0	0	0
ppp4	DOWN	0	0	0	0	0	0	0	0	0	0
ppp5	DOWN	0	0	0	0	0	0	0	0	0	0

## System Statistics

### Interface Statistics

Interface Statistics displays the statistics for all interfaces.

Screen Term	Meaning
Interface Name	Name of the interface
Admin Status	Indicates whether the interface is up or down
Octets In	Number of received octets (in bytes)
Unicast PktsIn	Number of received unicast packets
Broadcast PktsIn	Number of received broadcast packets
Discards In	Number of received and discarded packets
Errors In	Number of received errors
Octets Out	Number of transmitted octets (in bytes)
Unicast PktsOut	Number of transmitted unicast packets
Broadcast PktsOut	Number of transmitted broadcast packets
Discards Out	Number of transmitted and discarded packets
Errors Out	Number of transmitted errors



### TCP-IP

The TCP-IP screen displays IP, UDP, TCP and ICMP statistics.



### DHCP Lease

The DHCP-Lease displays names of devices on the network. These devices received an IP address from the router's DHCP server address pools. The screen also displays how long you can use this IP.



### ATM Statistics

The ATM Statistics Screen displays traffic statistics for Adaptation Layer 5 of the ATM protocol and encapsulation.

### AAL5 Statistics

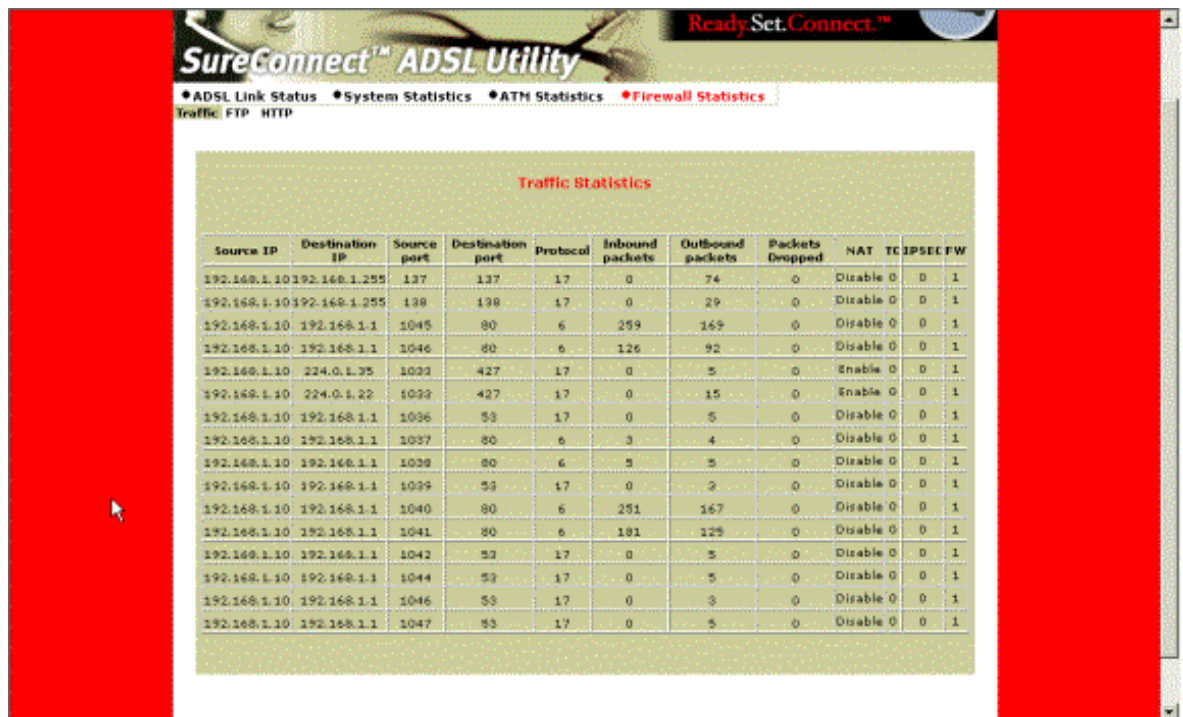
The AAL5 Screen totals transmitted and received cells. The screen also reports total CRC (Cyclical Redundancy Check) errors.



### Subnetwork Dependent Convergence Protocol (SNDP)



For the permanent virtual circuit (PVC), the SNDCP Screen organizes packet information by Encapsulation Method.



**Traffic Statistics**

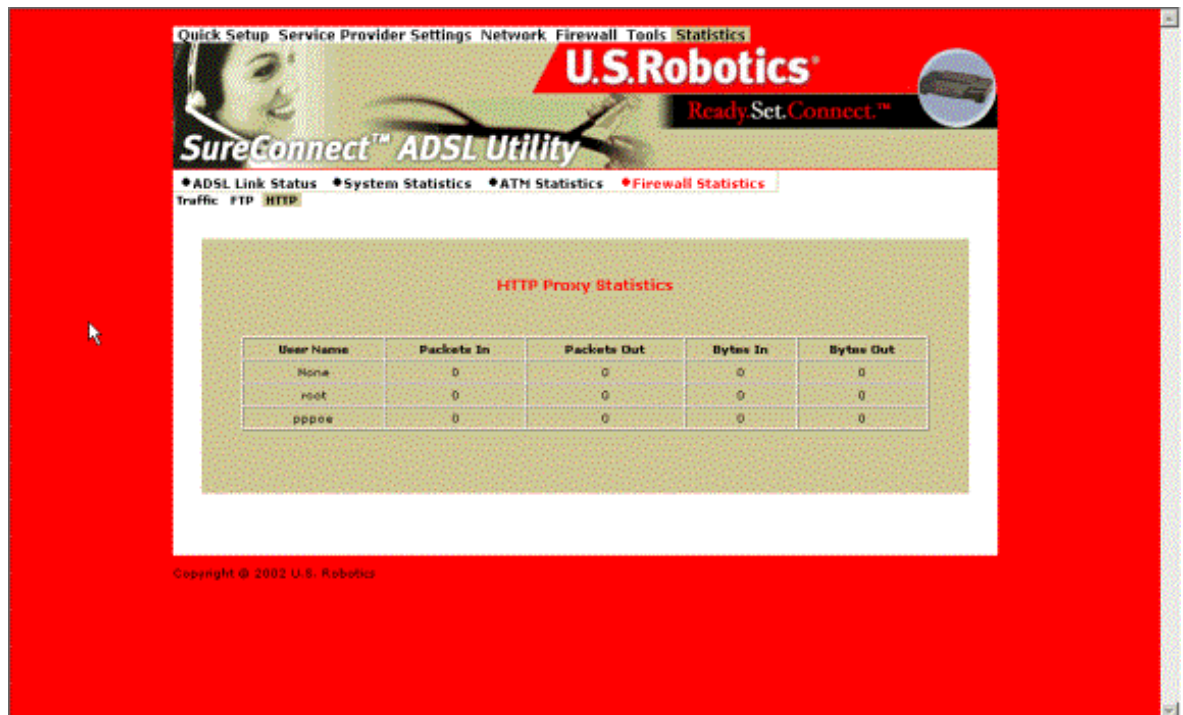
Source IP	Destination IP	Source port	Destination port	Protocol	Inbound packets	Outbound packets	Packets Dropped	NAT	TCP	FW
192.168.1.10	192.168.1.255	137	137	17	0	74	0	Disable	0	0
192.168.1.10	192.168.1.255	138	138	17	0	29	0	Disable	0	0
192.168.1.10	192.168.1.1	1045	80	6	259	169	0	Disable	0	0
192.168.1.10	192.168.1.1	1046	80	6	126	92	0	Disable	0	0
192.168.1.10	224.0.0.25	1033	427	17	0	5	0	Enable	0	0
192.168.1.10	224.0.0.22	1033	427	17	0	15	0	Enable	0	0
192.168.1.10	192.168.1.1	1036	53	17	0	5	0	Disable	0	0
192.168.1.10	192.168.1.1	1037	80	6	3	4	0	Disable	0	0
192.168.1.10	192.168.1.1	1038	80	6	5	5	0	Disable	0	0
192.168.1.10	192.168.1.1	1039	53	17	0	2	0	Disable	0	0
192.168.1.10	192.168.1.1	1040	80	6	251	167	0	Disable	0	0
192.168.1.10	192.168.1.1	1041	80	6	181	125	0	Disable	0	0
192.168.1.10	192.168.1.1	1042	53	17	0	5	0	Disable	0	0
192.168.1.10	192.168.1.1	1044	53	17	0	5	0	Disable	0	0
192.168.1.10	192.168.1.1	1046	53	17	0	3	0	Disable	0	0
192.168.1.10	192.168.1.1	1047	53	17	0	5	0	Disable	0	0

### Firewall Statistics

The Firewall Statistics Screen maintains flow-based statistics for incoming, outgoing and dropped packets. Flow statistics describe the source address, source port, destination address, destination port and protocol.

### Traffic Statistics

The Traffic Statistics Screen displays data about inbound, outbound and dropped packets.



**HTTP Proxy Statistics**

User Name	Packets In	Packets Out	Bytes In	Bytes Out
None	0	0	0	0
root	0	0	0	0
pppoe	0	0	0	0

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### **HTTP Proxy Statistics**

The HTTP Proxy Statistics screen maintains data on the user. Software collects statistics for incoming packets, outgoing packets, incoming bytes and outgoing bytes. If you disable authentication, this screen displays statistics on the general user.



## Contents:

US Robotics  
SureConnect ADSL  
Ethernet/USB Router  
Configuration Utility

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[Web User Interface](#)

[Terminal User Interface](#)

[Command Line  
Interface](#)

[Configuration Examples](#)

[Installation](#)

[Uninstallation](#)

[Troubleshooting](#)

[Glossary](#)

[Regulatory Information](#)

# U.S. Robotics *SureConnect*<sup>™</sup> ADSL Ethernet/USB Router User Guide

**Windows 95, 98, NT 4.0, Me, 2000, XP or later, Mac and Linux**

## Installing the Router

For current product support and contact information, go to the following Web site:

<http://www.usr.com/broadbandsupport>

Thanks for purchasing the U.S. Robotics *SureConnect*<sup>™</sup> ADSL Ethernet/USB Router, Model 9003. The following instructions walk you through installation of the router and the U.S. Robotics SureConnect ADSL Ethernet/USB Router.

Please write down your serial number for future reference. If you need to call our Technical Support department, you must have this number to receive assistance. You'll find your serial number on a bar code sticker on the bottom of the router and also on the box. This number has 12 characters. You will also need your model number, which is USR9003.

## Installation Overview & System Requirements

### What You Need Before You Begin

- Active ADSL and Internet service from your local telephone company or Internet Service Provider (ISP).
- A microfilter may be required for each telephone device (telephones, answering

machines, and fax machines) that shares the same phone line as the ADSL signal. Make sure that no filter connects between the ADSL router and telephone wall jack. (Some installations require a special type splitter between the router and wall jack. In these installations, the splitter must include both telephone and router jacks. If the splitter doesn't, don't install it between the phone jack and router.)

### **Your ISP should be able to provide the following:**

- Your user name and password if they were assigned.
- ADSL Standard (Modulation)
  - G.dmt
  - G.lite
  - Multi-Mode
  - T1.413, Issue 2
- VPI/VCI Settings
- Encapsulation Mode
  - RFC1483 Bridged
  - RFC1483 Routed
  - PPPoE
  - PPPoA
  - MER

### **Computer Requirements**

#### **Minimum System Requirements – Ethernet Port**

- Any computer with an Ethernet 10/100 Ethernet adapter (NIC)
- 32 MB RAM
- 10 MB hard disk space
- Any operating system that supports an Ethernet connection with an IP stack
- Internet Explorer or Netscape Navigator 4.0 or later Web browser
- SureConnect Installation CD-ROM requires Windows 95, Windows 98, Windows Me, Windows NT4.0, Windows 2000, or Windows XP

## Minimum System Requirements –USB Port

- Pentium 200 MHz or faster compatible CPU
- Host PC with Universal Serial Bus (USB)support
- 32 MB RAM
- 10 MB hard disk space
- Internet Explorer or Netscape Navigator 4.0 or later Web browser

### NOTICE

Make sure that your computer is on. You should have your operating system CD-ROM readily available. The installation program requires use of the Windows Setup CD.

- SureConnect Installation CD-ROM requires Windows 98, Windows Me, Windows 2000 or Windows XP


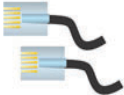
## ADSL Network Requirements






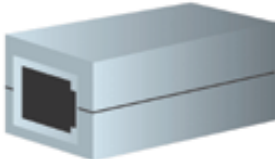
ADSL and Internet service from your local telephone company or Internet Service Provider (ISP).

## Power Requirements

The U.S. Robotics SureConnect ADSL Ethernet/USB Router obtains power from the included power supply. Be sure to only use the included power supply when operating this device.

This U.S. Robotics SureConnect ADSL Ethernet/USB Router package includes the following items:

	U.S. Robotics SureConnect ADSL Ethernet/USB Router Model 9003
	Standard 7 ft RJ-11 telephone cable (4 wire)

	Power Adapter
	USB Cable (3 ft/1 m)
	Ethernet Straight Through Cable (6 ft/1.8 m)
	Quick Installation Guide
	U.S. Robotics SureConnect Installation CD-ROM with User Guide
<b>Optional Components</b>	
	Some models may include a microfilter in the box, or your ISP may supply a microfilter. Check with your ISP to see if you need a microfilter. The next section discusses microfilter installation.

If you discover incorrect, missing, or damaged parts, inform your dealer.

## Should You Connect via Ethernet or USB?

The U.S. Robotics ADSL Ethernet/USB Router gives you the option to connect through a USB or an Ethernet port. Selecting how to connect your router is a matter of preference. Connection also depends on your available computer ports and the operating system that you use. For example, you must use an Ethernet connection with these operating systems: Windows 95, Windows NT 4.0, Macintosh and Linux.

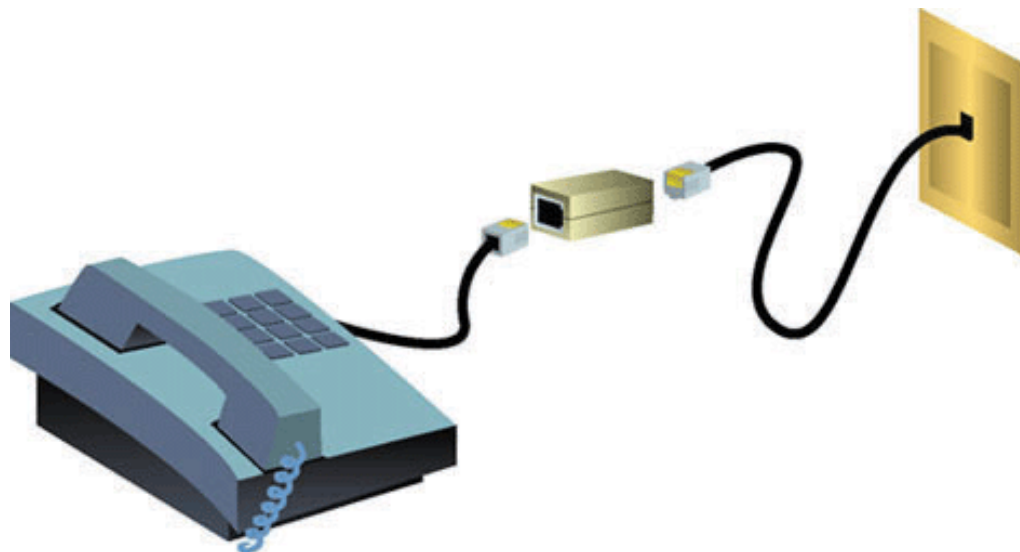
## Step 1. Connect Microfilters (If Necessary)

- If your package didn't include microfilters, and your ISP didn't provide any: Skip to Step 2 of these instructions.
- If your installation requires microfilters: Install one on each telephone device that shares the same phone line as the ADSL signal. (Telephone devices include telephones, answering machines, and fax machines.)

A microfilter is a small device that reduces interference between ADSL signals and telephone signals. You only need a microfilter if the ADSL router and a telephone device share the same phone line. If you don't use a microfilter, you may experience background noise on your telephone during data transmission. Also, telephone calls may interrupt data transmissions.

### Connect Microfilters to Telephone Devices

To install the microfilter, plug the phone into the microfilter, and then plug the microfilter into the telephone wall jack. Do not install a microfilter on the cable that connects your router to the telephone jack unless your microfilter has a connection for both the telephone and the DSL device.





## Step 2. Install the ADSL Ethernet/USB Router

### Windows 95 & NT 4.0, Macintosh and Linux Users

If you're installing the U.S. Robotics SureConnect ADSL Ethernet/USB Router on a system running Windows 95, NT 4.0, Macintosh or Linux, you must install the router using the Ethernet option.

To install the U.S. Robotics SureConnect ADSL Ethernet/USB Router, insert the Installation CD-ROM into the CD-ROM drive of your computer. If the installation does not start automatically, go to your desktop and double-click **My Computer**, double-click the drive letter associated with your CD-ROM drive, and then double-click **Setup**.

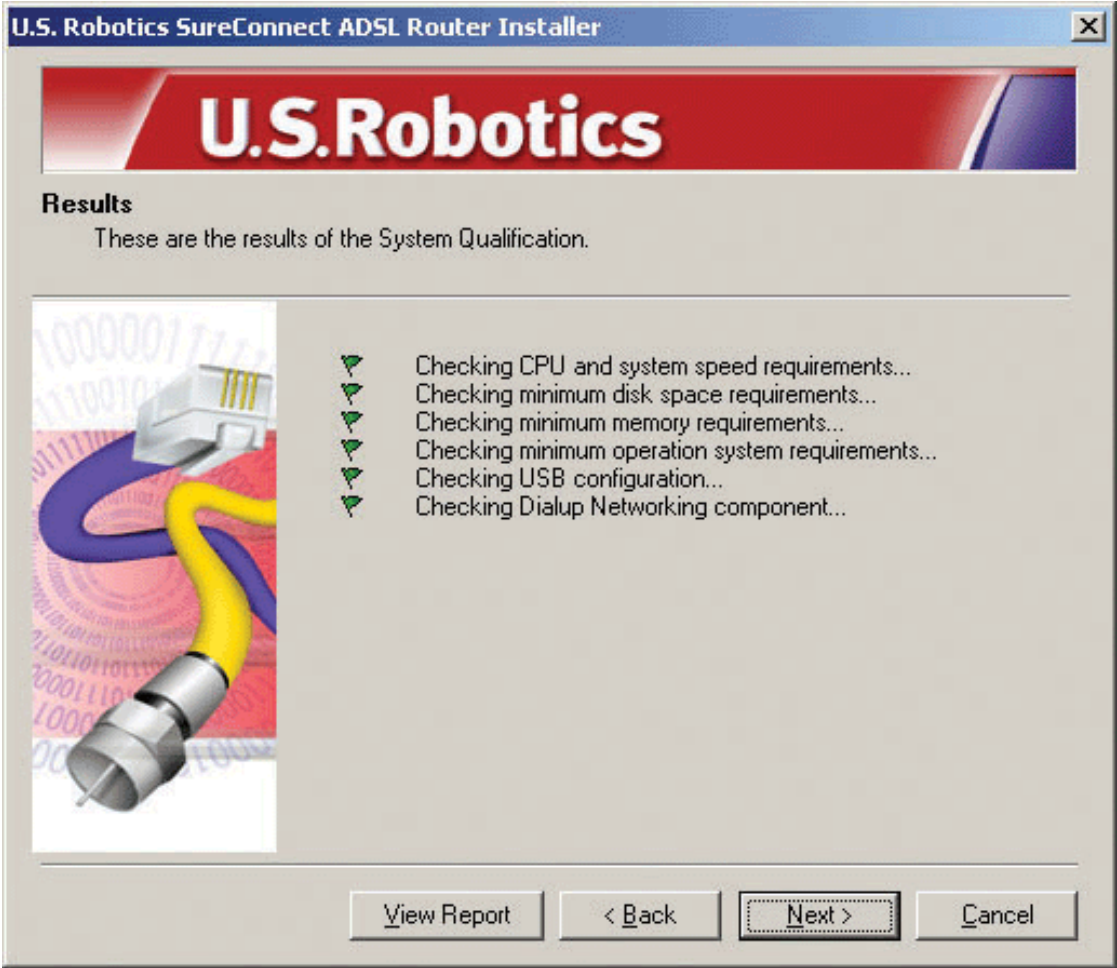
The U.S. Robotics SureConnect ADSL Ethernet/USB Router Installer Welcome window will display. Click **Next** to continue installing the U.S. Robotics SureConnect ADSL Ethernet/USB Router.



- Select the connection type that you will use to connect the router to your computer. Click **Next**.



- A qualification test will run to verify that your system meets the minimum installation requirements. The Results screen will display those items in your configuration that passed with a green flag and the ones that failed with a red flag. If your system passed the qualification, click **Next**.



If the software notifies you that your system failed the test, click **View Report**. The report identifies which component failed.

**Step 3. Connect the Cables**

The table below summarizes data for connections and ports on the back of the router.

Item	Description

O/I	Pushbutton switch that turns the U.S. Robotics SureConnect ADSL Ethernet/USB Router on and off.
Power	Input jack that accepts cable from wall power supply.
Console	Connects an RS-232 cable (not included) to the router. You can use the cable to communicate to the router through the Terminal User Interface. The Terminal User Interface (TUI) is another way to configure the router or get diagnostic information. The TUI substitutes for the Web User Interface.
USB	Universal serial bus port on the back of the router.
ENET1	Ethernet Port 1 on the back of the router.
ENET2	Ethernet Port 2 on the back of the router.
ADSL	Digital subscriber line RJ-11 service jack on the back of the router.

### Connect the Power Adapter

Be sure to only use the included power supply. Connect the power adapter cord to the “Power” jack at the rear of the router. Connect the power adapter to a standard wall outlet.

Turn on the router by pressing the power button labeled “O / I.” The “PWR” LED on the front panel of the U.S. Robotics ADSL Ethernet/USB Router will be illuminated if power is being supplied to the router. The router will initialize after the power is plugged in. This process takes about a minute. Click **Next** to initialize the router.



### Connect the Telephone Cable

Connect one end of the included telephone cable to the "ADSL" telephone port on the back of your router. Connect the other end of the cable into the telephone wall jack. Click **Next**.





## Connect the Ethernet or USB Cable

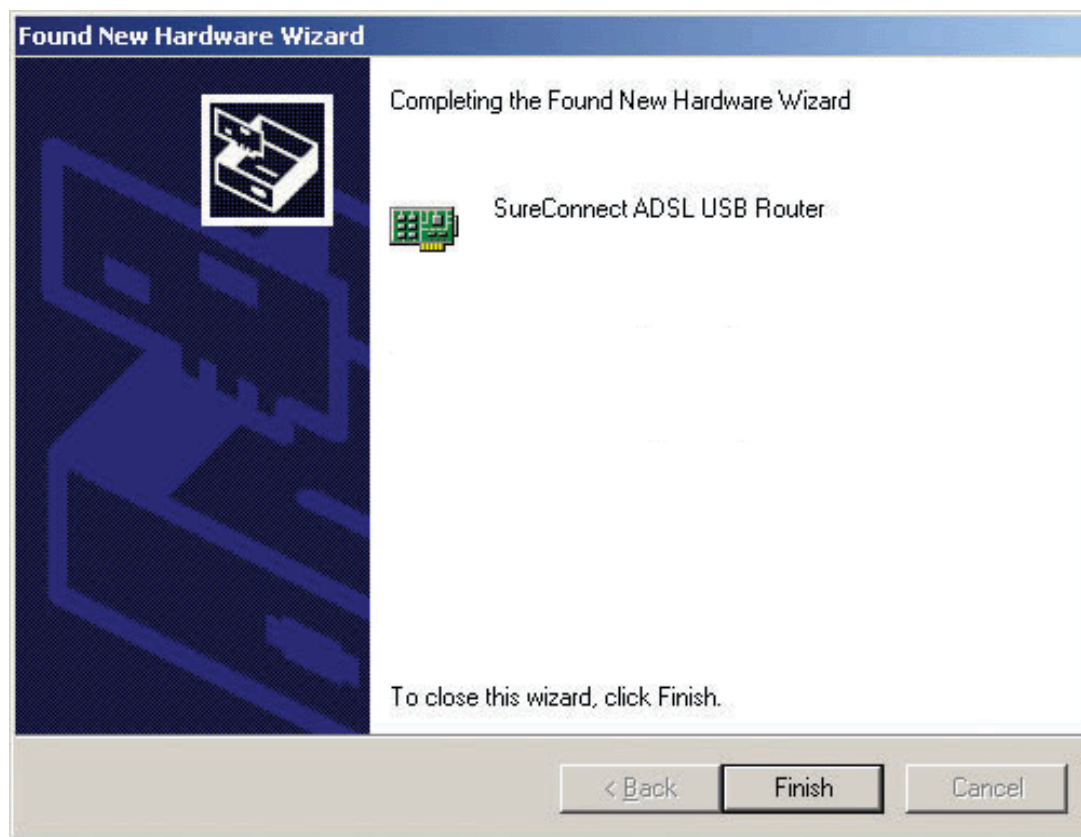
### Ethernet

If you are connecting up to two devices, you can plug them directly into the back of the router. Doing so eliminates the need for a separate hub. Insert one end of the Ethernet cable into either the "ENET1" or "ENET2" port on the back of the U.S. Robotics SureConnect ADSL Ethernet/USB Router. Connect the other end of the Ethernet cable to the Ethernet port on your computer's 10/100 Network Interface Card (NIC).

- Click **Finish**.

## USB

- If you have chosen to connect via the USB port, insert the rectangular end of the included USB cable into the USB port of the computer. Insert the square end of the cable into the port labeled “USB” on the U.S. Robotics SureConnect ADSL Ethernet/USB Router.
- After you plug in the USB cable, the router detects your PC. Then the router automatically installs its software on your PC. (Your system may require a system reboot.)
- The Found New Hardware Wizard notifies you that the PC detects the router. Click **Finish**.



## Congratulations! Installation Complete!

You've completed installation of the U.S. Robotics SureConnect ADSL Ethernet/USB Router. Click **Finish**. The installer will automatically launch the Internet browser. The Internet browser will point to IP address **192.168.1.1**.



At this point, the software prompts you for a username and password. The default username is "root." The default password is "12345." Enter these values (*without periods or quotation marks*).

### If your browser doesn't auto-launch...

Begin the Quick Setup by launching your Internet browser and entering **http://192.168.1.1**.

The SureConnect ADSL Utility Quick Setup screen will display.



#### Step 4. Using the Quick Setup Menu

The U.S. Robotics SureConnect ADSL Ethernet/USB Router comes equipped with the SureConnect ADSL Web Utility. This utility helps you to get the router set up in three easy steps.

1. Select ADSL Standard.
2. Configure service provider settings.

### 3. Save and restart.

#### CAUTION!

Do not turn the power off or disturb the router before the save operation completes. Interrupting this process will cause the router to lose setup data.

Quick Setup Service Provider Settings Network Firewall Tools Statistics

**U.S. Robotics®**  
Ready.Set.Connect.™

**SureConnect™ ADSL Utility**

☒ ADSL Standard ☐ WAN Setup ☐ Save & Restart

**ADSL Standard**

ADSL Standard : > Multi Mode ▼

Apply Cancel

In most cases the default setting of MultiMode is sufficient, check with your ISP for the correct setting.

Next

#### Select ADSL Standard

1. Click **ADSL Standard**. The ADSL Standard window opens. This window helps you to select the ADSL standard that you'll use.

- From the ADSL Standard drop-down list, select **G.dmt**, **G.lite**, **T1.413**, or **Multi-Mode**. In most cases, the default setting of Multi-Mode is sufficient. Check with your ISP to confirm the correct settings. Once you have made your selection, click **Apply**.
- Click **Next** in the lower right corner of the screen to continue to the WAN Setup page.

**WAN Setup**

VPI:  VCI:

Encapsulation Mode: ☒ LLC/SHAP ☐ No Multiplexing

Network Settings: ☐ Enable NAT ☐ Enable DHCP

☒ PPPoE Bridged

☐ PPPoE Routed  
 WAN IP address:  WAN subnet mask:

☐ PPPoE  
 User name:   
 Password:   
 Dialing Mode:  Idle Timeout (min):  Authentication:

☐ PPPoA  
 User Name:   
 Password:  Authentication:

☐ PPTP  
 IP address:  subnet mask:

**Current ATM PVC List**

Select Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
No PVC Configured											



## Configure Service Provider Settings

In the Service Provider Settings/WAN Setup screen, enter in the values obtained from your ISP. See the ISP Settings Table at the end of this Web page for popular ISP settings.

(Settings may vary from the table listing. Check with your ISP.) If you don't find your ISP on the table, call your ISP to obtain the correct settings.

1. See the Current ATM PVC List at the bottom of the screen. On this list, delete any connection type that you don't need.
2. Select the connection type recommended by your ISP. Choose either RFC1483 bridged mode, RFC 1483 routed mode, PPPoE mode, PPPoA mode, or MER mode. Some connection types may require additional information, such as IP address or username and password.
3. At the top of the WAN Screen, fill in the VPI and VCI values.
4. Select **Encapsulation**. Click either **LLC/SNAP** or **VC Multiplexing**.
5. If appropriate, select **Enable NAPT**.
6. If appropriate, select **Enable DHCP**.
7. Click **Add**.
8. To continue, click **Next** in the lower right corner of the screen.



## Save and Restart

Once you've selected the ADSL Standard and WAN Setup screens, save your settings and restart your router.

1. On the Save & Restart screen, click **Save**.
2. Once the save is complete, click **Restart**.

**NOTICE**

If your ISP gave you software to install, install the software now. Be sure to read and follow the installation instructions.

3. You can test your connection by registering your router at...

<http://www.usr.com/productreg>

## Service Provider Settings

!+++++Start of header row+++++>

<b><i>Service Provider</i></b>	<b><i>Region</i></b>	<b><i>WAN Service</i></b>	<b><i>VPI</i></b>	<b><i>VCI</i></b>	<b><i>Encapsulation -LLC or VCMUX</i></b>
Australia  All ISP	Australia	PPPoE  RfC2516  Embedded	8	35	LLC
Belgacom ADSL	Belgium	PPPoA - RFC2364	8	35	LLC
Telus	Canada	RFC 1483 Bridged	0	35	LLC
Tiscali (World Online)	Denmark	PPPoA - RFC2364	0	35	VCMUX
Cybercity	Denmark	PPPoA - RFC2364	0	35	VCMUX
AOL	France	PPPoA - RFC2364	8	35	VCMUX
Generic Netissimo	France	PPPoA - RFC2364	8	35	LLC

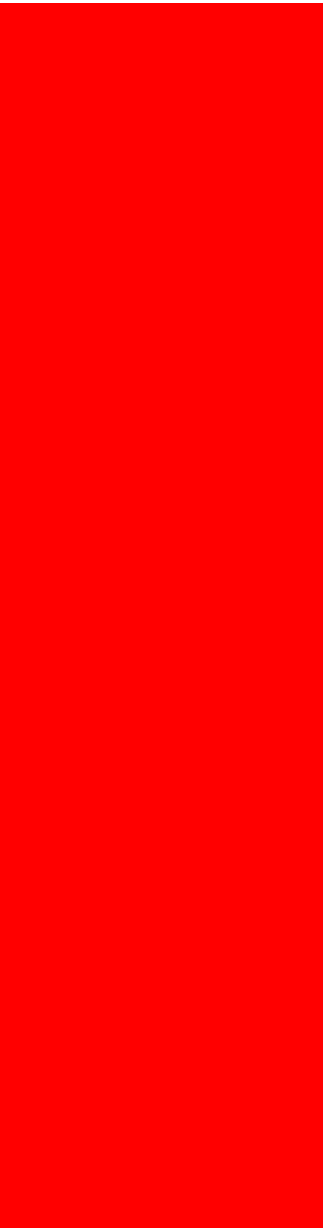
9Online	France	PPPoA - RFC2364	8	35	VCMUX
Claranet	France	PPPoA - RFC2364	8	35	VCMUX
Club-Internet	France	PPPoA - RFC2364	8	35	VCMUX
EasyConnect	France	PPPoA - RFC2364	8	35	LLC
Freesurf	France	PPPoA - RFC2364	8	35	VCMUX
HRNet	France	PPPoA - RFC2364	8	35	VCMUX
Nerim	France	PPPoA - RFC2364	8	35	VCMUX
<b><i>Service Provider</i></b>	<b><i>Region</i></b>	<b><i>WAN Service</i></b>	<b><i>VPI</i></b>	<b><i>VCI</i></b>	<b><i>Encapsulation -LLC or VCMUX</i></b>
Nordnet	France	PPPoA - RFC2364	8	35	VCMUX
Tiscaly Liberty Surf	France	PPPoA - RFC2364	8	35	LLC
Wanadoo	France	PPPoA - RFC2364	8	35	LLC
Worldnet	France	PPPoA - RFC2364	8	35	VCMUX
T-Online (Dun)	Germany	PPPoE RFC2516 Embedded	1	32	LLC
T-Online (Soft)	Germany	RFC 1483 Bridged	1	32	LLC

AOL Deutschland (Soft)	Germany	RFC 1483 Bridged	1	32	LLC
QSC	Germany	PPPoE RFC2516	1	32	LLC
Arcor	Germany	PPPoE RFC2516	1	32	LLC
1&1 (Dun)	Germany	PPPoE RFC2516 Embedded	1	32	LLC
Anderer Provider für T-DSL (Dun)	Germany	PPPoE RFC2516 Embedded	1	32	LLC
Anderer Provider für T-DSL (Soft)	Germany	RFC 1483 Bridged	1	32	LLC
Tiscali	Germany	PPPoE - RFC2516	1	32	LLC
<b>Service Provider</b>	<b>Region</b>	<b>WAN Service</b>	<b>VPI</b>	<b>VCI</b>	<b>Encapsulation -LLC or VCMUX</b>
Islandssimi	Iceland	PPPoA - RFC2364	0	35	VCMUX
Landssimi	Iceland	PPPoA - RFC2364	8	48	VCMUX
Nextra	Italy	PPPoA - RFC2364	8	35	VCMUX
Tiscali	Italy	PPPoA - RFC2364	8	35	VCMUX
Aruba	Italy	PPPoA - RFC2364	8	35	VCMUX

MC-link	Italy	PPPoA - RFC2364	8	35	VCMUX
Wind	Italy	PPPoA - RFC2364	8	35	LLC-VCMUX
Telvia	Italy	PPPoA - RFC2364	8	35	VCMUX
Albacom	Italy	PPPoA - RFC2364	8	35	VCMUX
Telecom Italia	Italy	PPPoA - RFC2364	8	35	LLC
KPN MXSTREAM	Netherlands	PPPoA - RFC2364	8	48	VCMUX
New Zealand Telecom	New Zealand	PPPoA - RFC2364	0	100	VCMUX
Portugal Telecom	Portugal	RFC 1483 Routed	8	35	LLC
SingNet Broadband	Singapore	PPPoA - RFC2364	0	100	VCMUX
<b><i>Service Provider</i></b>	<b><i>Region</i></b>	<b><i>WAN Service</i></b>	<b><i>VPI</i></b>	<b><i>VCI</i></b>	<b><i>Encapsulation -LLC or VCMUX</i></b>
Wanadoo Spain	Spain	RFC1483 Routed	8	32	LLC
Ya.com	Spain	RFC 1483 Routed	8	32	LLC
Uni2	Spain	PPPoA - RFC2364	1	33	LLC
Telefonica	Spain	RFC 1483 Routed	8	32	LLC - VCMUX
ERES MAS	Spain	PPPoA - RFC2364	8	35	LLC



Jazztel	Spain	PPPoA - RFC2364	8	35	LLC
Terra	Spain	RFC 1483 Routed	8	32	LLC
Retevision	Spain	PPPoA - RFC2364	8	35	VCMUX
Tiscali	Spain	PPPoA - RFC2364	1	32	VCMUX
Telepac	Spain	PPPoE RFC2516 Embedded	0	35	LLC
Skanova	Sweden	RFC 1483 Bridged	8	35	LLC
Etisalat Classical IP Single User	UAE	RFC 1577 (1483) Routed	0	100	LLC
Etisalat Classical IP for Business	UAE	PPPoA - RFC2364	0	50	VcMux
UAE-Other	UAE	PPPoE RFC2516 Embedded	0	50	LLC
UAE-Other	UAE	RFC1483 Routed	0	100	LLC
<b><i>Service Provider</i></b>	<b><i>Region</i></b>	<b><i>WAN Service</i></b>	<b><i>VPI</i></b>	<b><i>VCI</i></b>	<b><i>Encapsulation -LLC or VCMUX</i></b>
UK All ISP	UK	PPPoA - RFC2364	0	38	VCMUX
AOL	US	RFC 1483 Bridged	0	35	LLC



SBC	US	RFC 1483 Bridged	0	35	LLC
Sprint	US	RFC 1483 Bridged	0	35	LLC
BellSouth	US	RFC 1483 Bridged	8	35	LLC
Qwest	US	RFC 1483 Bridged	0	32	LLC
Verizon	US	RFC 1483 Bridged	0	35	LLC
Covad	US	RFC 1483 Bridged	0	35	LLC
EarthLink	US	RFC 1483 Bridged	0	35	LLC

Ready. Set. Connect.





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SureConnect ADSL  
Ethernet/USB Router  
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# U.S. Robotics *SureConnect* ADSL Ethernet/USB Router User Guide

**Windows 95, 98, NT 4.0, Me, 2000, XP or later,  
Mac and Linux**

## Terminal User Interface

### Overview

The Terminal User Interface (*TUI*) is one of three router user interfaces. The other interfaces are the Web User Interface (*WUI*) and Command Line Interface (*CLI*). Each interface allows you to set up, modify, and view router configuration variables and operational data.

The Terminal User Interface is a system of hierarchical, character-based menus. See the nearby overview for a graphic map of the interface.

Each menu presents options and prompts you for a response. Options occupy most of a menu screen. The bottom of the screen provides information about expected responses...

- Mandatory vs. optional
- Allowable formats
- Operation success or failure
- Error messages
- Directions on what to do next

This document often refers to menu screens with path notation. For example, consider the example in the following table...

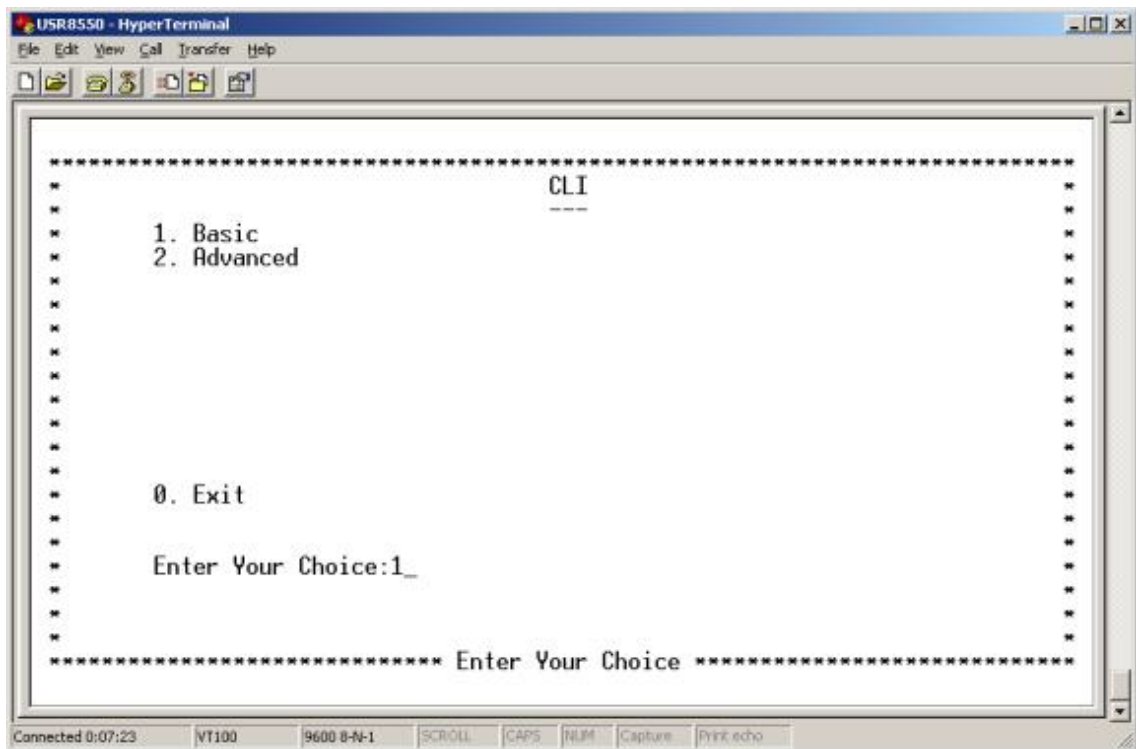
The Desired Action	The Process	The Path Notation
Access PPPoA configuration menu from Main Menu screen.	Choose 2 for 'ADVANCED', 7 for 'SND CP', 3 for 'PPPoA', and 2 for 'CONFIGURE PPPoA'.	Main Menu=>Advanced=> SND CP=>PPPoA=>  Configure PPPoA

Screen shots best describe some menu options. In this manual, a description precedes each screen shot. Afterward, the manual provides definitions of screen variables. Pages without screen shots include a menu path, followed by a description and necessary definitions.



version of TUI map:

## Main Menu



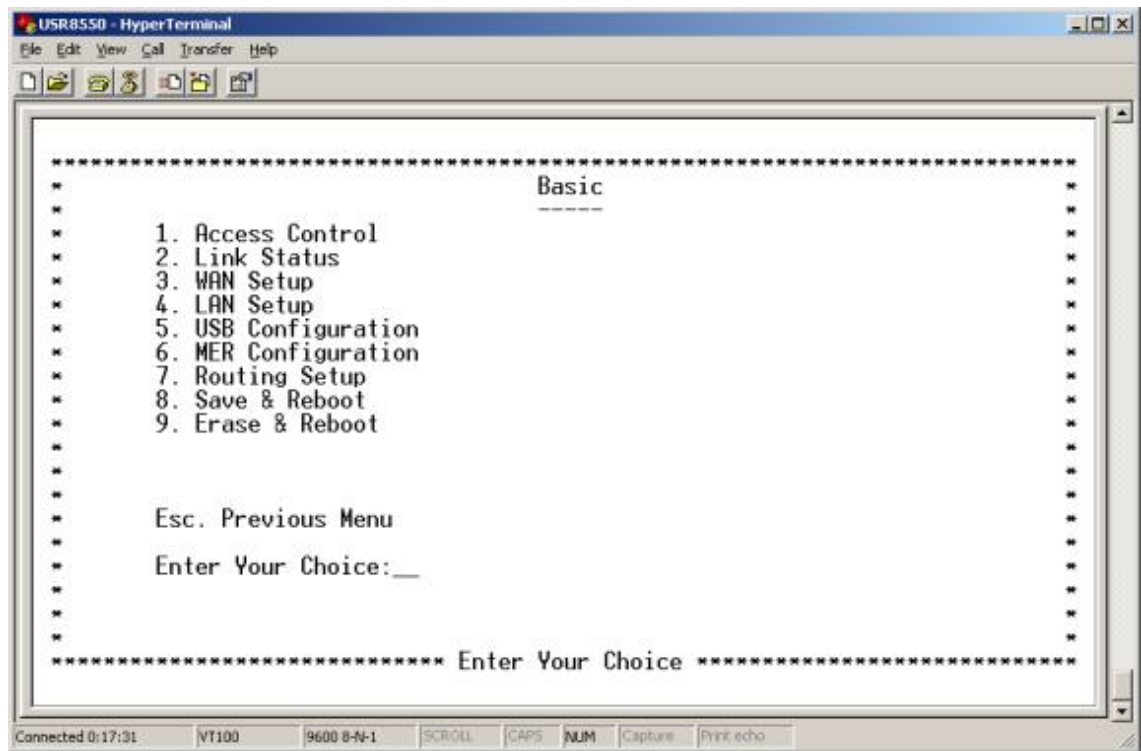
The Main Menu is the first or top-level menu in the Terminal User Interface. The Main Menu presents you with three options...

- Enter 1 to open the to the Basic Menu.
- Enter 2 to open the Advanced Menu.
- Enter 0 to exit the Terminal User Interface.

### Main Menu=>

#### Basic

Enter 1 at the Main Menu. The Basic Menu appears. This menu includes the following options...



## Main Menu=>Basic=>

### Access Control

Enter 1 at the Basic Menu. The Access Control Menu appears. This menu provides the following options...

- **List Users.** Lists currently defined users by type, and provides associated services. The user "root" is the default administrative login for the router.
- **Configure User.** Opens the Configure User Menu, which allows you to add or delete users. Add users to enforce ACL (Access Control List) and proxy services. Options include...

§ User Name	§ Password
§ Permissions (admin / ordinary)	

- **Delete User.** Allows you to delete users by user name.
- **Change Password.** Allows you to change a user's password. Options include...

§ User Name	§ Old Password
§ New Password	§ Confirm Password



**Main Menu=>Basic=>****Link Status**

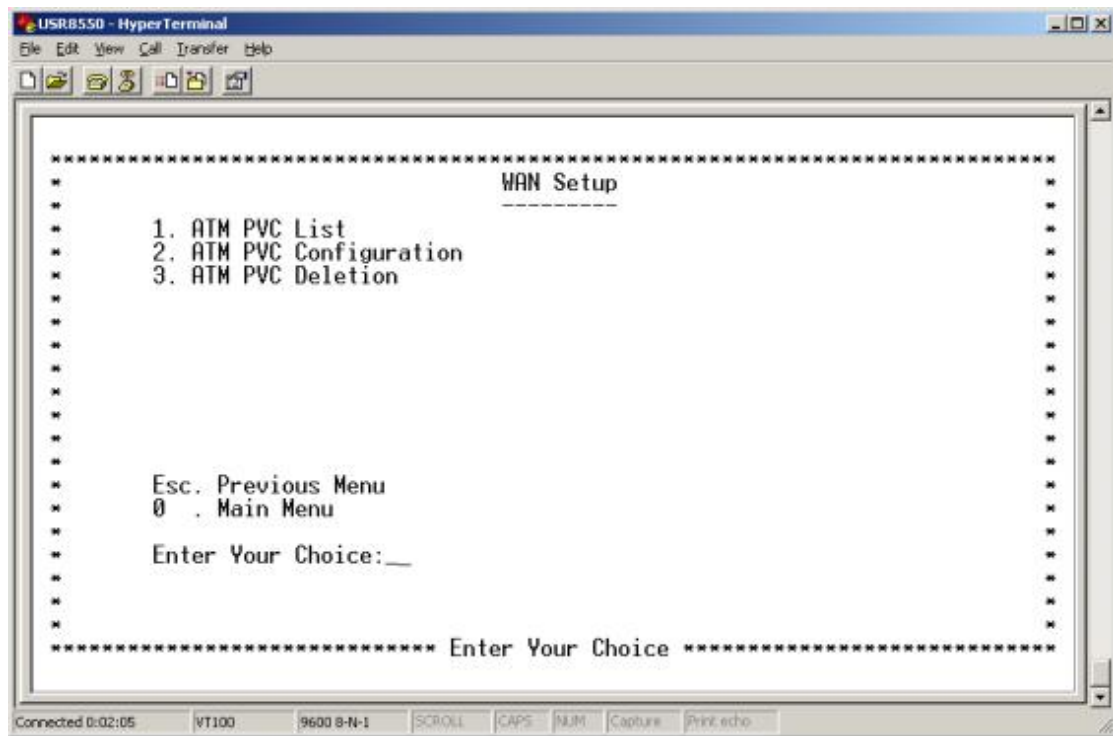
Enter 2 at the Basic Menu. The Link Status Menu appears. This menu displays current link status. Link status parameters include...

**Link Status Parameters**

Status Term	Meaning
ADSL Line Status	Displays the current ADSL line status
ADSL Standard	Displays the ADSL standard within the current configuration. The standards are: MULTI, T1.413, G.dmt, and G.Lite.
UpStream	Displays the upstream data rate, as negotiated by DSL link (KB/s)
DownStream	Displays the downstream data rate, as negotiated by DSL link (KB/s)
Attenuation	Displays the current attenuation in decibels
SNR Margin	Displays the current SNR margin in decibels
HEC Count	Displays the number of ATM cells received with errors since start of link.
Firmware	Displays the version number of the firmware
15 min ES Counter	Displays the number of errors per second for the current 15-minute period
CRC Errors	Displays the number of cyclical redundancy check errors per second since training
1 day ES Counter	Displays the number of errors per second for the current day

**Main Menu=>Basic=>****WAN Setup**

Enter 3 at the Basic Menu. The WAN Setup Menu appears. This menu allows you list, configure, or delete ATM PVCs. Each option takes you to another screen.



- **ATM PVC List.** Enter 1 at the WAN Setup Menu. The ATM PVC List Menu appears. This menu displays a list of currently defined PVCs.

- **ATM PVC Configuration.** Enter 2 at the WAN Setup Menu. The ATM PVC Configuration Menu appears. To configure an ATM PVC...

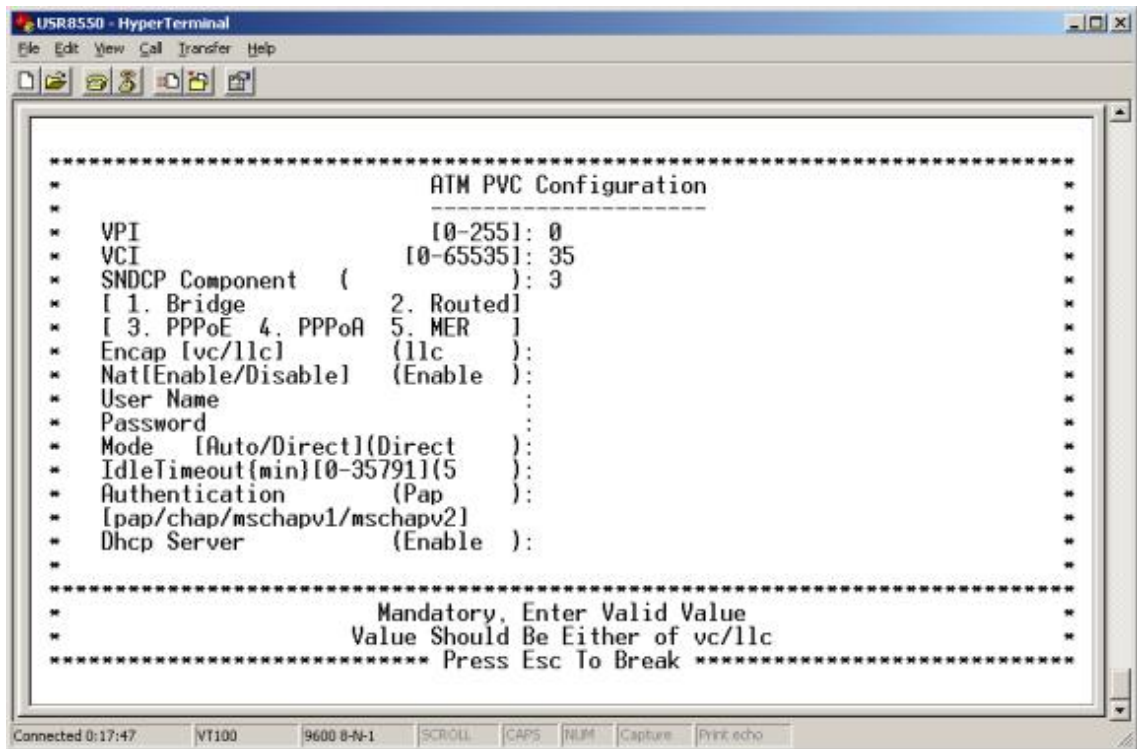
1. Enter a 2 on the WAN Setup Menu. The ATM PVC Configuration Menu appears.
2. Enter VPI and VCI data...

§ VPI [0-255]	§ Subnet Mask ( )
§ VCI [0-65,535]	§ User Name
§ SNDCCP Component ( )	§ Password
§ [Bridge / Routed / PPPoE / PPPoA / MER]	§ Mode [Auto / Direct]
§ Encap [vc / 11c]	§ Idle Timeout [min]
§ Nat [Enable / Disable]	§ Authentication ( )
§ WAN IP Address ( )	§ [pap / chap / mschapv1 / mschapv2]
	§ DHCP Server ( )

3. Five Subnetwork Dependent Convergence Protocol (SNDCCP) options appear. (Bridge / Routed / PPPoE / PPPoA / MER)
4. Choose the SNDCCP option provided by your DSL service provider. Next, SNDCCP options for the SNDCCP that you selected appear. Subsequent screens present several options for each SNDCCP.

## 5. Enter the required information...

Main Menu=&gt;Basic=&gt;

**WAN Setup** *(continued)*§ **Bridge**

- A. For a bridge PVC, enter a 1 at SNDCP Component.
- B. Enter the encapsulation type (vc or llc).

§ **Routed**

- A. Enter SNDCP option 2 for routed.
- B. Choose the encapsulation method.
- C. Choose to enable or disable the NAT.
- D. Configure the WAN IP Address.
- E. Configure the subnet mask.

§ **PPPoE**

- A. Enter SNDCP option 3 for PPPoE.
- B. Enter remaining information as provided by your DSL service provider.

## § **PPPoA**

- A. Enter SNDCP option 4 for PPPoA.
- B. Enter remaining information as provided by your DSL service provider.

## § **MER**

- A. Enter SNDCP option 5 for MER.
- B. Enter remaining information as provided by your DSL service provider.

6. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

**Main Menu=>Basic=>**

## **WAN Setup** *(continued)*

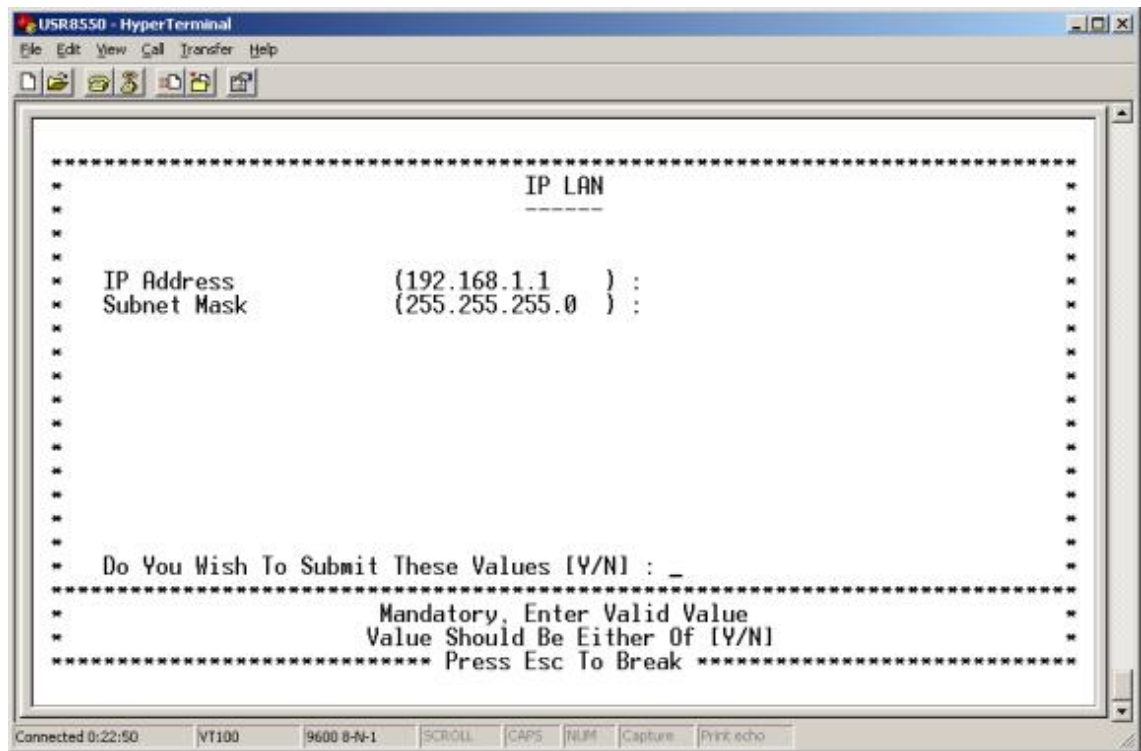
- **ATM PVC Deletion.** Enter 3 at the WAN Setup Menu. The ATM PVC Deletion Menu appears. To delete an ATM PVC...
  1. Enter valid VPI and VCI values.
  2. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

**Main Menu=>Basic=>**

## **LAN Setup**

Enter 4 at the Basic Menu. The IP LAN Menu appears. To configure a LAN IP address...

1. Accept default values or enter new IP address and subnet mask values.
2. Use LAN Setup to set the router's IP Address and Subnet Mask.
3. Setup the LAN IP address to connect the router to.
4. Manage the router from your Local Area Network (LAN). A LAN connects computers in the same building or area.
5. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.



**IP addresses** deliver packets of data across a network. These addresses differentiate the source and destination IP address and keep them constant. When a router port detects a packet, the router checks the routing table. The port attempts to match the network number of the destination IP address with its routing table entry. If the port finds a match, it forwards the packet to the destination network. With no match, the port forwards the packet to a router defined as the default gateway.

**Subnet masks** split one network into a set of mini networks or subnets. Subnetting helps to reduce traffic on each subnet. Subnetting also makes the network more manageable. Each subnet functions as if it were an independent network.

**Main Menu=>Basic=>**

## USB Configuration

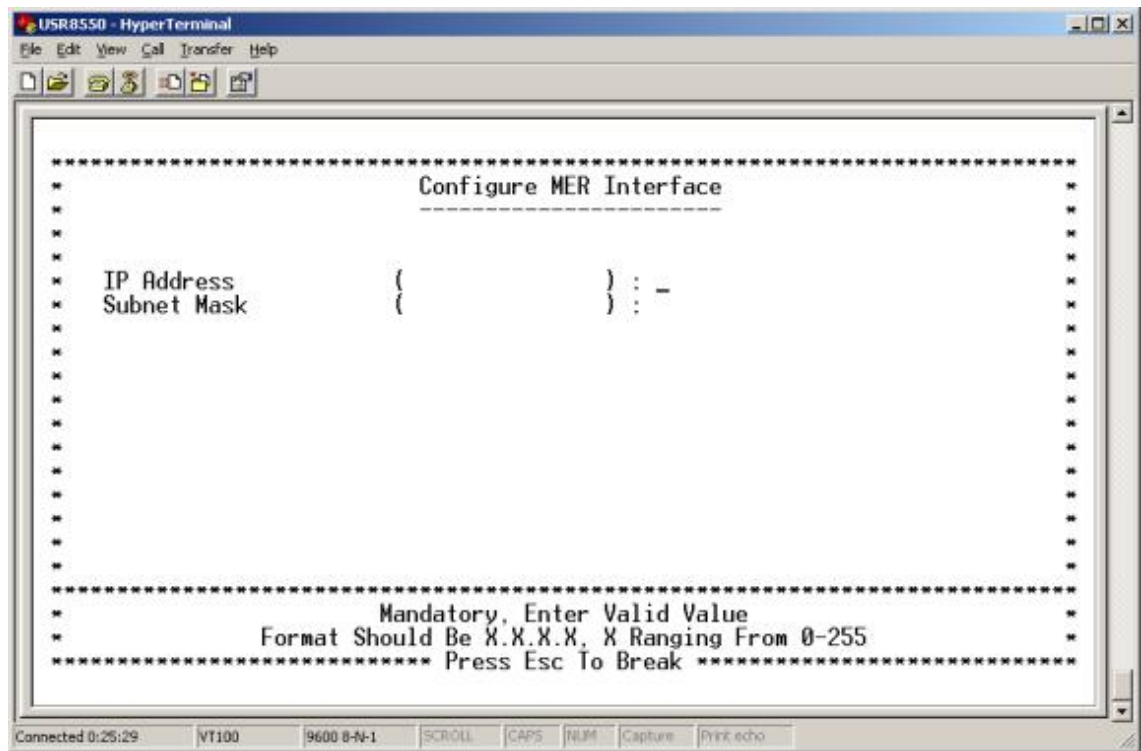
Enter 5 at the Basic Menu. The Configure USB Interface Menu appears. To configure the USB interface...

1. Enter a valid IP Address.
2. Enter a valid subnet mask.
3. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

## MER Configuration

1. Enter a valid subnet mask.
2. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

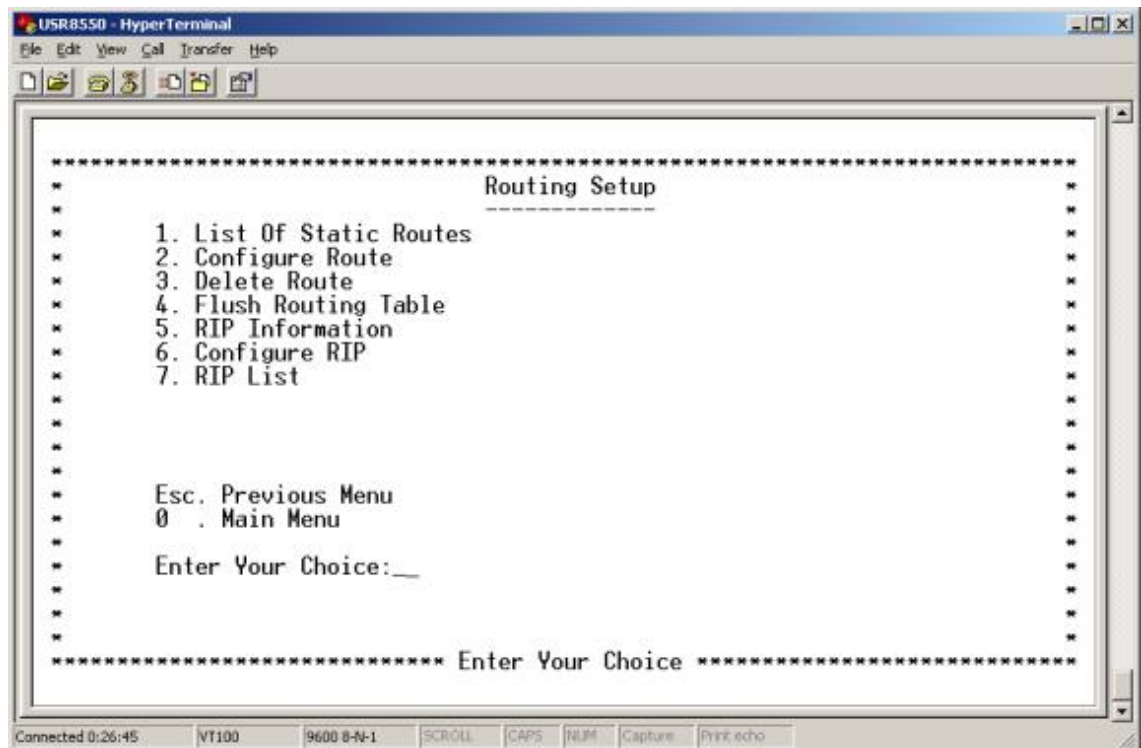




Main Menu=>Basic=>

## Routing Setup

Enter 7 at the Basic Menu. The Routing Setup Menu appears. The Routing Setup menu provides seven menu options. These options allow you to configure a route.



- **List Of Static Routes.** Enter 1 at the Routing Setup Menu. The List of Static Routes Menu appears. This menu lists defined static routes by Network ID address, subnet mask, and next hop address.

- **Configure Route.** Enter 2 at the Routing Setup Menu. The Configure Route Menu appears. From this menu, you can add new static routes. A router forwards data packets between local area networks (LANs) or wide area networks (WANs). Based on routing tables and routing protocols, routers read the network address in each transmitted frame. Routers then decide how to send the frame. A router bases this decision on the best route. The Configure Route Menu allows you to adjust how the router forwards received IP packets.

To configure a route...

1. Enter a valid destination network ID. This is the network IP designation of the network defined in the table.
2. Enter a valid destination subnet mask. This is the network subnet mask of the entry defined in the table.
3. Enter a valid next hop ID. This is the IP address or gateway that the router uses to arrive at the destination address.
4. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

**Main Menu=>Basic=>**

### **Routing Setup (*continued*)**

- **Delete Route.** Enter 3 at the Routing Setup Menu. The Delete Route Menu appears. From this menu, you can delete a route. To delete a route...

1. Enter the appropriate network ID.
2. Enter subnet mask data.
3. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **Flush Routing Table.** Enter 4 at the Routing Setup Menu. The Flush Routing Table Menu appears. To flush a routing table...

1. Type Y.
2. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **RIP Information.** Enter 5 at the Routing Setup Menu. The RIP Information Menu appears. This menu lists currently configured RIP information.

- **Configure RIP.** Enter 6 at the Routing Setup Menu. The Configure RIP Menu appears. Use this menu to turn RIP on or off. Also use the menu to define which RIP version to use. Routing Information Protocol (RIP) is a routing protocol and is part of the TCP/IP suite. RIP plots a route based on the smallest hop count between source and destination. RIP determines the smallest hop count by communicating with other routers in the network. Only use RIP if the target router also utilizes RIP.

To set up a route...

1. Enter the RIP status. Set RIP Status to either “on” or “off.”
  2. Enter a number for the version. Either set RIP Version to 1 (for RIP1) or 2 (for RIP2). The version number must match the RIP version that other routers in the network use.
  3. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.
- **RIP List.** Enter 7 at the Routing Setup Menu. The RIP List Menu appears. This menu displays routes that the RIP has learned. You’ll see an empty list if RIP is off or if the router hasn’t learned any routes.

**Main Menu=>Basic=>**

## **Save & Reboot**

Enter 8 at the Basic Menu. The Save & Reboot Menu appears. This menu allows you to save the current configuration and reboot the router.

**Main Menu=>Basic=>**

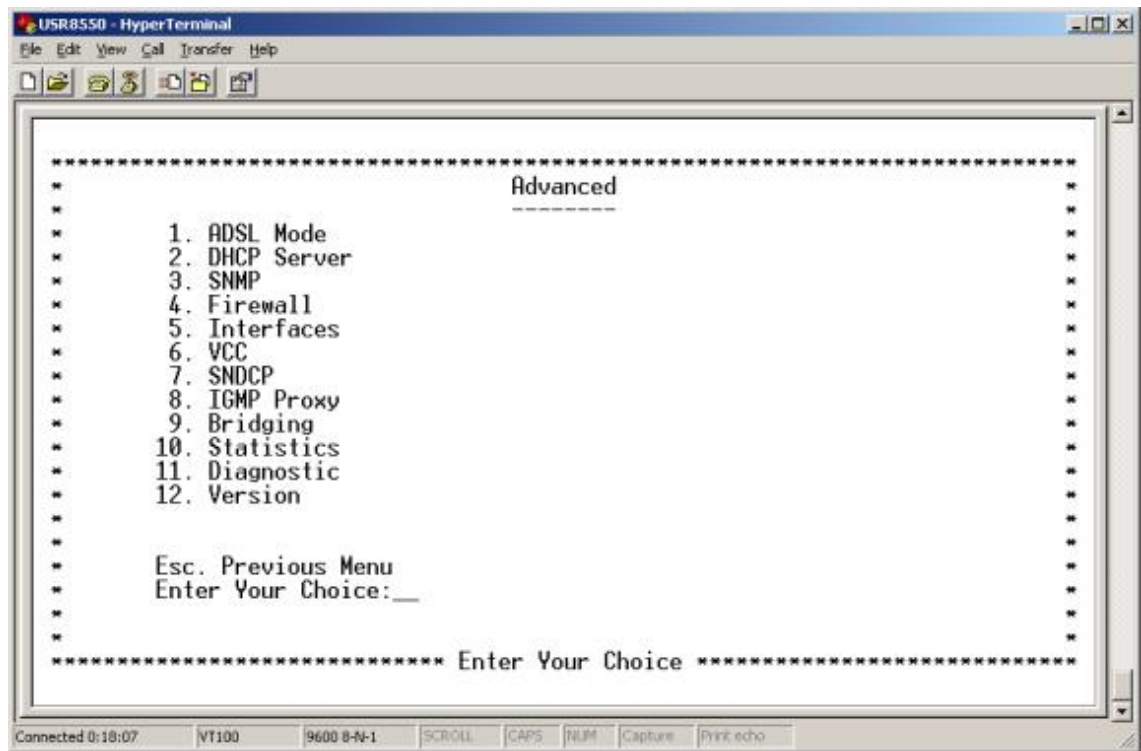
## **Erase & Reboot**

Enter 9 at the Basic Menu. The Erase & Reboot Menu appears. This menu allows you to erase the saved configuration and reboot the router.

**Main Menu=>**

## **Advanced**

Enter 2 at the Main Menu. The Advanced Menu appears. This menu provides the following options...



Main Menu=>Advanced=>

## ADSL Mode

Enter 1 at the Advanced Menu. The ADSL Mode Menu appears. This menu allows you to read or write configuration and management variables, or configure the ADSL mode. The router uses configuration and management variables (CMV) to tweak performance and provide management functions. Router firmware defines these values.



### CAUTION

Don't write configuration and management variables unless you receive explicit instructions to do so. Alteration of CMV values can adversely affect router performance.

- **Configure ADSL Mode.** Enter 3 at the ADSL Mode Menu. The Configure ADSL Mode Menu appears. This menu allows you to switch the ADSL mode to ANSI (T1.413), G.dmt, G.lite or Multimode. Your ADSL service provider determines these values.



### CAUTION

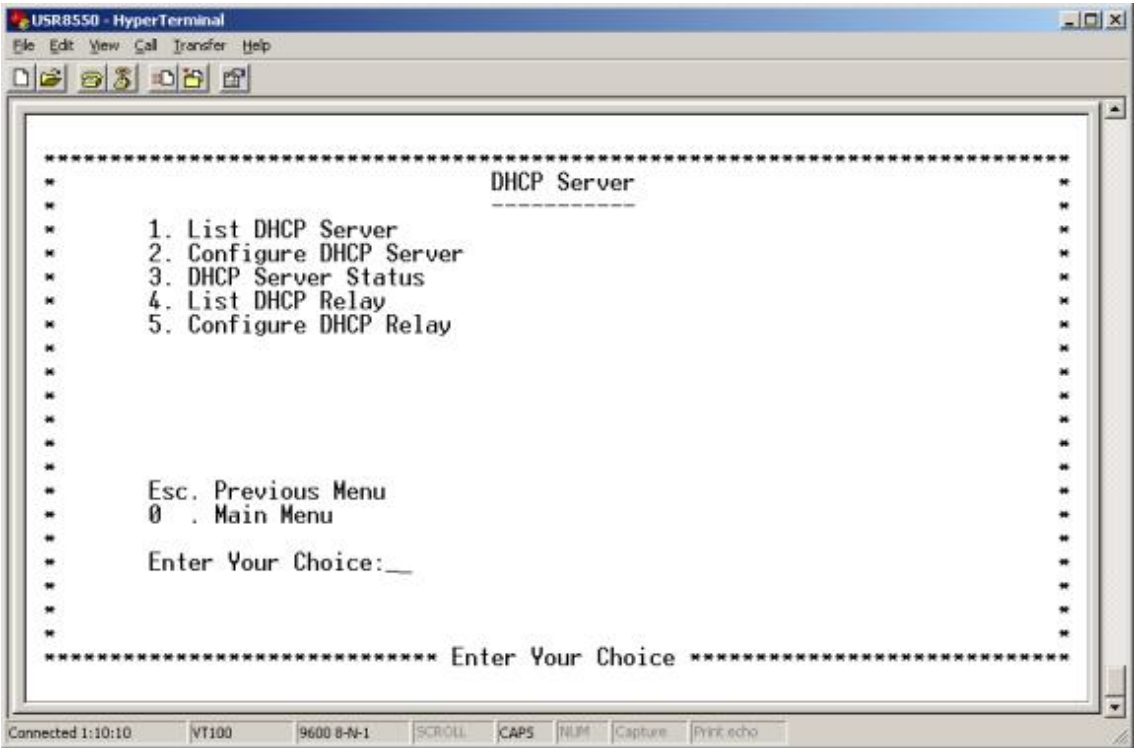
Leave ADSL mode values alone unless you receive specific instructions on what to do. Alteration of the ADSL mode can adversely affect router performance.

Main Menu=>Advanced=>

## DHCP Server

Enter 2 at the Advanced Menu. The DHCP Server Menu appears. DHCP stands for Dynamic Host Configuration Protocol. This protocol dynamically assigns IP addresses and related information to Local Area Network (LAN) nodes. For temporarily connected network users, DHCP provides safe, reliable, and simple TCP/IP network configuration. DHCP confers these benefits by preventing address conflicts and conserving IP address use. To conserve address use, DHCP centralizes address allocation.

The DHCP Server menu provides the following options...



- **List DHCP Server.** Enter 1 at the DHCP Server Menu. The List DHCP Server Menu appears. This menu provides a list of currently configured DHCP servers and associated variables.
- **Configure DHCP Server.** Enter 2 at the DHCP Server Menu. The Configure DHCP Server Menu appears. To configure a DHCP server...
  1. Choose an Ethernet interface. The remaining DHCP options appear on the screen.
  2. Create a new DHCP server for the selected interface by entering legal values for each variable. See DHCP variables below.
  3. Set the following parameters...

### DHCP Parameters

DHCP Term	Definition
Interface	LAN port that the DHCP server will support.

Starting IP Address	First IP address provided on a LAN port node's DHCP request.
End IP Address	Last IP address in the pool provided on a LAN port node's DHCP request.
Gateway	IP address of the Default Gateway or Router that the node will use.
Netmask	Subnet Mask for the LAN that the node will be on.
DNS	Domain Name Server. Actually, here we aren't referring to the DNS itself. Instead, we refer to the IP address of the DNS that the node will use. DNS is a server with a database. The database translates a domain name into a corresponding IP address. For example, "USR.com" resolves into IP address 231.222.320.04. Use this address to communicate over the LAN between the node and USR.com web site.
Lease Time	Number of days that the node can use a DHCP lease. Subsequently, you must renew the lease with the DHCP server.

- After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

**Main Menu=>Advanced=>**

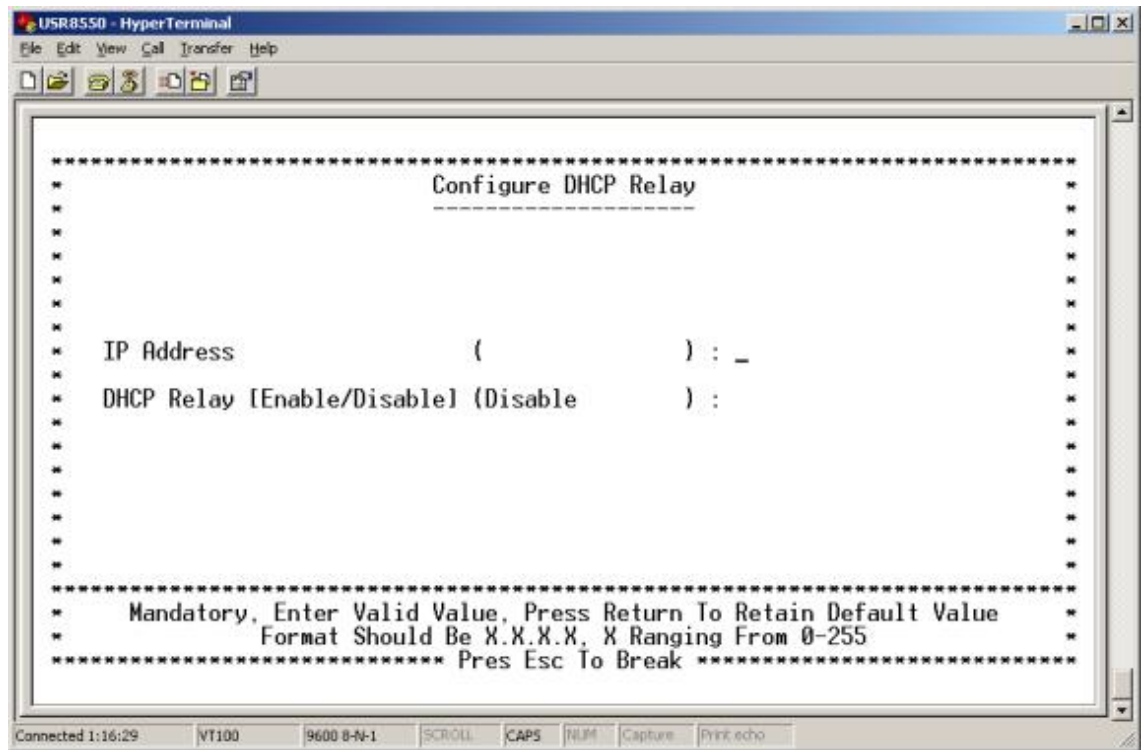
## **DHCP Server** *(continued)*

- **DHCP Server Status.** Enter 3 at the DHCP Server Menu. The DHCP Server Status Menu appears. This menu displays current DHCP server status. The menu also allows you to enable, disable, or delete DHCP servers.
- **List DHCP Relay.** Enter 4 at the DHCP Server Menu. The List DHCP Relay Menu appears. This menu displays DHCP Relay information.
- **Configure DHCP Relay.** Enter 5 at the DHCP Server Menu. The DHCP Server Status Menu appears. This menu allows you to configure DHCP relay functions. Suppose that a Dynamic Host Configuration Protocol (DHCP) server resides on a different LAN than the node broadcasting for DHCP service. Then the DHCP broadcast request must be forwarded across the router/WAN to a subnet where a DHCP server resides. To assure receipt of an IP address that corresponds to this subnet, the router relays DHCP. The router must have a record of the DHCP server's IP address. With this address, the router can direct the request to the DHCP server's appropriate input IP address.

To configure a DHCP relay, follow these steps...



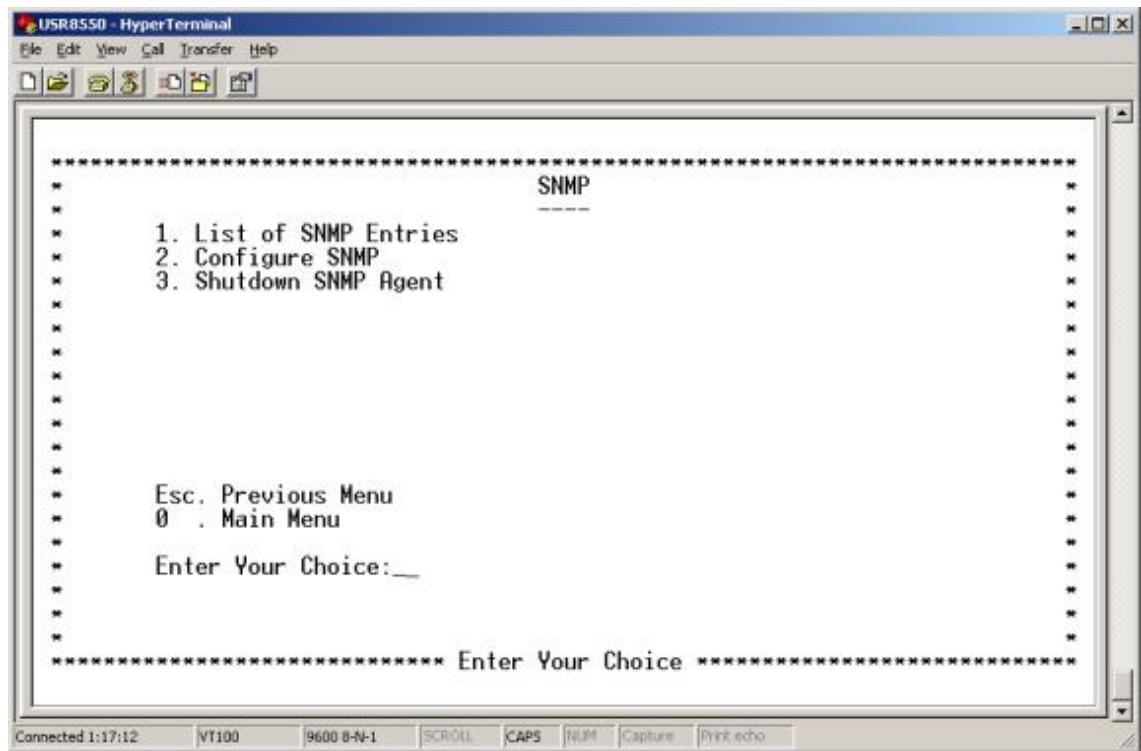
1. On the Configure DHCP Relay Menu, input the IP address of DHCP server.
2. Enable the relay agent.
3. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.



**Main Menu=>Advanced=>**

## **SNMP**

Enter 3 at the Advanced Menu. The SNMP Menu appears. This menu provides the following options...



- **List of SNMP Entries.** Enter 1 at the SNMP Menu. The SNMP Entries Menu appears. This menu lists your SNMP variable settings.
- **Configure SNMP.** Enter 2 at the SNMP Menu. The Configure SNMP Menu appears. This menu allows you to configure SNMP variables.

1. Enter VPI and VCI data...

§ System Version description ( ) § System Location ( )

§ System Contact ( )

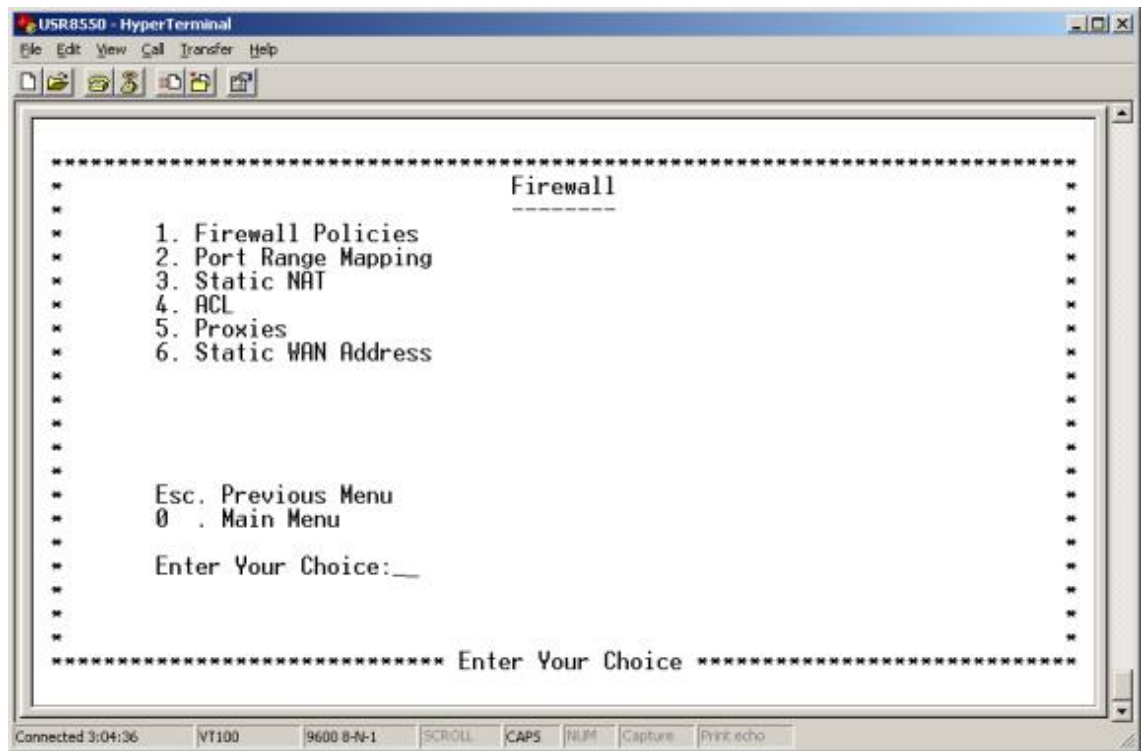
2. After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **Shutdown SNMP Agent.** Enter 3 at the SNMP Menu. The Shutdown SNMP Agent Menu appears. This menu allows you to shut down the SNMP agent.

**Main Menu=>Advanced=>**

## Firewall

Enter 4 at the Advanced Menu. The Firewall Menu appears. This menu provides the following options...



- **Firewall Policies.** Enter 1 at the Firewall Menu. The Firewall Policies Menu appears. Select Policies or Action, or press <ESC> to exit to the previous menu.

**Main Menu=>Advanced=>Firewall=>Firewall Policies=>**

## Policies

Enter 1 at the Firewall Policies Menu. The Policies Menu appears. This menu allows you to add, list, or delete port firewall policies.

- **Add Firewall Policy.** Enter 1 at the Policies Menu. The Firewall Add Policies Menu appears. To add a firewall policy, set the following parameters...

### *Firewall Policy Parameters*

Policy Term	Definition
Precedence	Priority of the policy that you're creating. Options range from 0 to 65,535.
Src IP Address	Data source. Either an IP address or network.
Src Net Mask	Subnet Mask for the data's network source. Options range from /12 (255.240.0.0) to /32 (255.255.255.255).
Dest IP Address	Data destination. Either an IP address or network.

Dest Net Mask	Subnet Mask for the data's network destination. Options range from /12 (255.240.0.0) to /32 (255.255.255.255).
Source Port	Transport layer source port. Options range from 0 to 65,535.
Protocol	IP protocols to be filtered. Options are: Any (all), TCP, UDP, ICMP, AH, ESP.
TCP Flags	Filtering of the TCP Flags that control session setup and termination. Options are: None, urg (Urgent), ack (acknowledgment), psh (push), rst (reset), syn (synchronize), fin (finished).

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **List Firewall Policies.** Enter 2 at the Policies Menu. The List Firewall Policies Menu appears. This menu displays implemented firewall policies. Press <ENTER> to see the next page in the list.
- **Delete Firewall Policies.** Enter 3 at the Policies Menu. The Delete Firewall Policies Menu appears. This menu allows you to delete Firewall policies.

**Main Menu=>Advanced=>Firewall=>Firewall Policies=>**

## Action

Enter 2 at the Firewall Policies Menu. The Action Menu appears. This menu allows you to add, list, or delete firewall actions.

- **Add Firewall Action.** Enter 1 at the Action Menu. The Firewall Action Add Menu appears. To add a firewall action, set the following parameters...

### *Firewall Action Parameters*

Policy Term	Definition	
Interface Name	Name of the Interface to apply the parameter to.	
Direction	Specifies whether the action applies to incoming, outgoing, or both incoming and outgoing traffic. Options are Any, In, and Out.	
FW Action	How the system handles packets. Your sub-options include...	
	Allow	Permits packets to enter or leave the system.
	Reset	Forces the TCP connection to reset

Time	Reject	Drops the packet and issues an “unreach host” ICMP error.
	Deny	Drops the packet.
	The parameter applies during the time period that you specify. Select the start (From) day, time and stop (To) day and time.	

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **List Firewall Action.** Enter 2 at the Action Menu. The Firewall Action List Menu appears. This menu displays implemented firewall actions.
- **Delete Firewall Action.** Enter 3 at the Action Menu. The Firewall Action Add Menu appears. This menu allows you to delete Firewall actions.

**Main Menu=>Advanced=>Firewall=>**

## Port Range Mapping

Enter 2 at the Firewall Menu. The Port Range Mapping Menu appears. This menu allows you to add, list or delete port range mapping.

- **Add.** Enter 1 at the Port Range Mapping Menu. The Add Menu appears. This menu allows you to add port range mapping entries. NAT stands for Network Address Translation. NAT enhances the power of Port Range Mapping. Together, they can map a local IP address and port to a public IP address and port. To add a port range entry, enter starting and ending addresses to map them to a single public address.

To add a port range entry, set the following parameters...

### *Port Range Mapping Parameters*

Port Range Term	Definition
Public Address	Set the public, destination IP address inside a packet header. The router will map or redirect packets with the address that you specify.
Public Port From	Set the first (From) port of the public address that the router maps or redirects. Options range from 1 to 65,535.
Public Port To	Set the last (To) port of the public address that the router maps or redirects. Options range from 1 to 65,535.

Local Address	Set the IP address of a machine on the local LAN. The router directs packets to this address.
Local Port From	Set the first (From) port of the local address that the router uses. Options range from 1 to 65,535.
Local Port To	Set the last (To) port of the local address that the router uses. Options range from 1 to 65,535.
Protocol	Set protocol. Your protocol setting applies to the other parameters on this page. Your options are TCP or UDP port numbers.

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **List.** Enter 2 at the Port Range Mapping Menu. The List Menu appears. This menu displays configured port mapping entries. If you find an empty list, then you haven't defined any entries.
- **Delete.** Enter 3 at the Port Range Mapping Menu. The Delete Menu appears. This menu allows you to delete port range mapping entries.

**Main Menu=>Advanced=>Firewall=>**

## Static NAT

Enter 1 at the Firewall Menu. The Static NAT Menu appears. This menu allows you to add, list, or delete Static NAT entries. Static NAT stands for Static Network Address Translation. Static NAT maps local IP addresses to a public IP address.

- **Add.** Enter 1 at the Static NAT Menu. The Add Menu appears. This menu allows you to add Static NAT entries. To add a Static NAT entry, set the following parameters...

### *Static NAT Parameters*

Static NAT Term	Definition
Local Address From	First address in a range of local IP addresses. The router maps these addresses to the public IP address.
Local Address To	Last address in a range of local IP addresses. The router maps these addresses to the public IP address.
NAT Public Address	Public address. The router maps local addresses to this public address.

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.



- **List.** Enter 2 at the Static NAT Menu. The List Menu appears. This menu displays implemented static NAT entries. If you find an empty list, then you haven't defined any entries.
- **Delete.** Enter 3 at the Static NAT Menu. The Delete Menu appears. To delete a Static NAT entry, enter the starting local address.

**Main Menu=>Advanced=>Firewall=>**

## ACL

Enter 4 at the Firewall Menu. The ACL Menu appears. This menu allows you to add, list, or delete ACL entries. ACL provides setup for Proxy services. From the Proxy Configuration Menu, you can enable or disable proxy services.

Proxy Services are specialized application programs. These programs accept users' requests from LAN clients for Internet services like FTP and HTTP. On behalf of LAN clients, the programs then set up connections to servers on the WAN. A proxy server authenticates against the user database. This server filters the request against the Access Control List. The server forwards requests to actual services. Proxy Servers are application specific. Each application needs its own proxy server.

- **Add ACL/FTP.** Enter 1 at the ACL Menu. The ACL Configuration Menu appears. This menu allows you to set FTP ACL variables. Options after "User Name" depend on whether you enter "FTP" or "HTTP." See ACL variables after the http example.

### *ACL Parameters*

Static NAT Term	Definition
Application (Port)	Proxy port to configure. Options are FTP or HTTP.
Priority	Priority of the policy you're creating. Options range from 0 to 65,535.
User Name	A configured user in the router's internal database. You must configure users through the Telnet CLI with the "adduser" command.
MIME Type	HTTP application file type (MIME) to filter or proxy. Options are... •application (all), •image (all), •video (all), •audio (all), •application/octet-stream, •audio/x-wav, •audio/x-mpeg, •image/jpeg, •video/mpeg.
Method	FTP command to filter or proxy. Options are Get and Put.
Domain Name	Address of an Internet site to filter.
Destination Address	Destination IP address of the FTP or HTTP server on the WAN.

- **List ACL.** Enter 2 at the ACL Menu. The ACL List Menu appears. This menu displays variables associated with currently defined ACLs.
- **Delete ACL.** Enter 3 at the ACL Menu. The ACL Delete Menu appears. To delete an ACL entry, enter the application type and rule ID.

## Proxies

USR8550 - HyperTerminal

File Edit View Call Transfer Help

\*\*\*\*\* Proxies \*\*\*\*\*

1. Configure Proxy

Esc. Previous Menu  
0 . Main Menu

Enter Your Choice:\_\_

\*\*\*\*\* Enter Your Choice \*\*\*\*\*

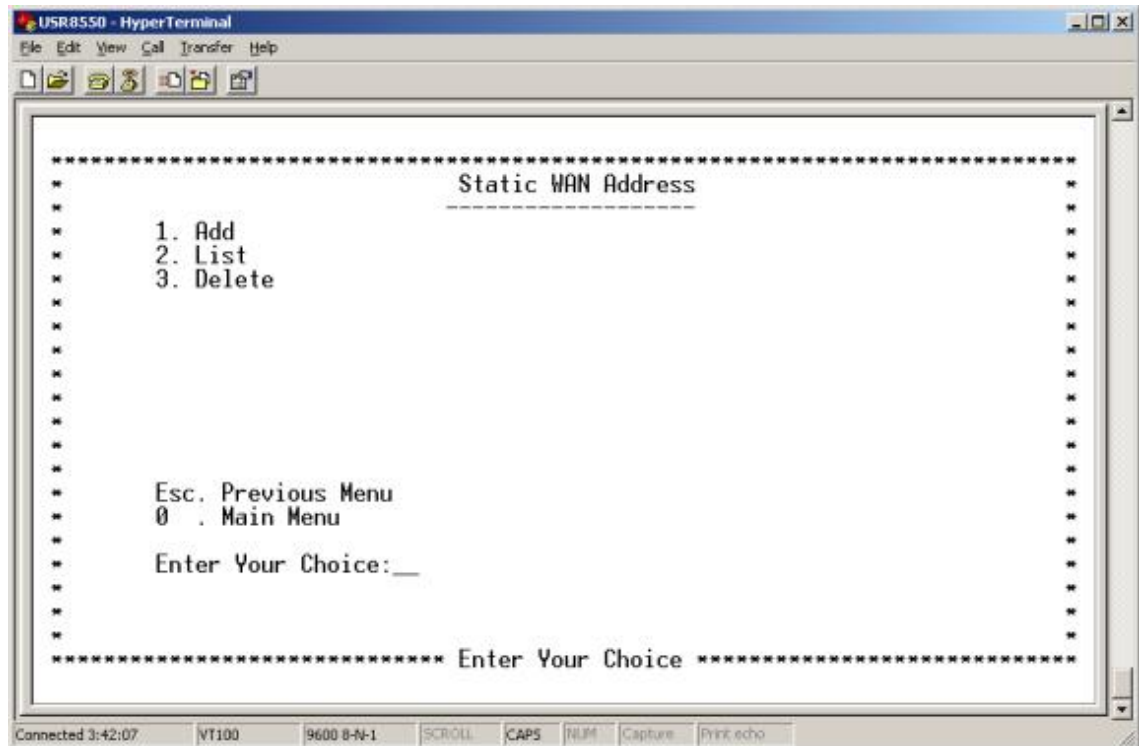
Connected 3:40:50 VT100 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

- **Configure Proxy.** Enter 1 at the Proxy Menu. The Proxy Configuration Menu appears. This menu allows you to enable or disable ftp or http proxies. See the ACL menu for more information on Proxy setup.

Main Menu=>Advanced=>Firewall=>

## Static WAN Address

Enter 6 at the Firewall Menu. The Static WAN Address Menu appears. This menu allows you to add, list or delete static WAN addresses.

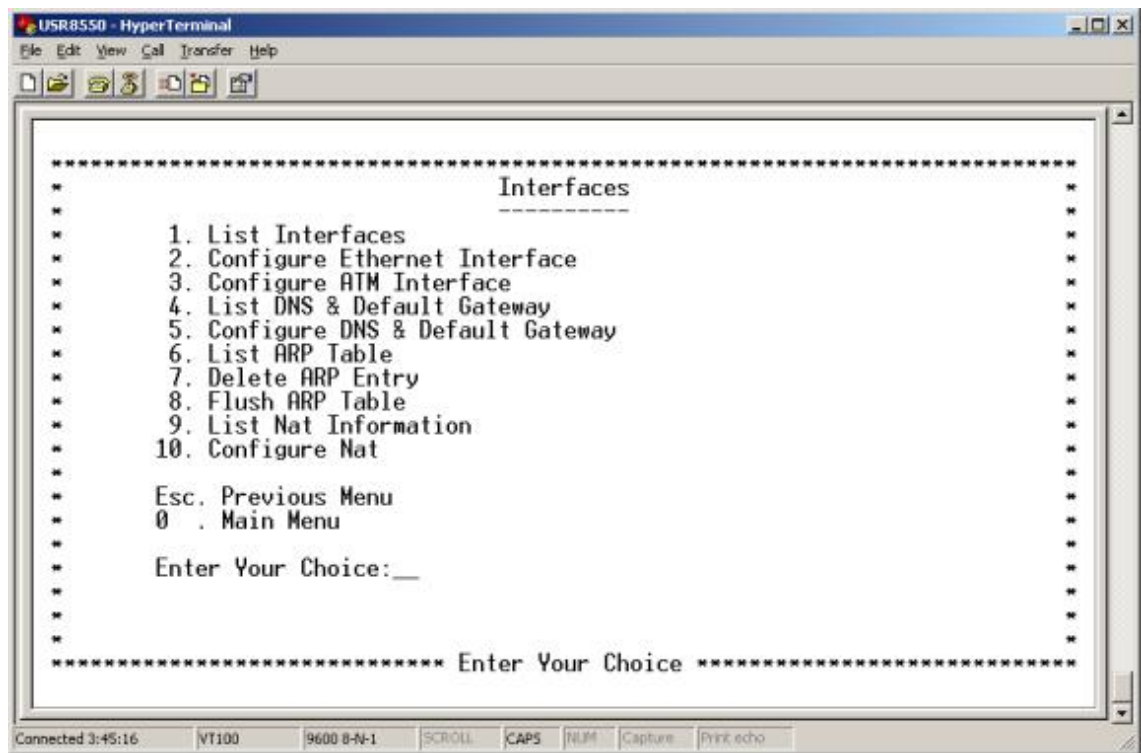


- **Add.** Enter 1 at the Static WAN Address Menu. The Add Static WAN Address Menu appears. This menu allows you to use a static WAN IP address. Enter the IP address of the WAN.
- **List.** Enter 2 at the Static WAN Address Menu. The List Static WAN Address Menu appears. This menu displays applied static WAN IP address.
- **Delete.** Enter 3 at the Static WAN Address Menu. The Delete Static WAN Address Menu appears. This menu allows you to delete static WAN IP addresses.

Main Menu=>Advanced=>

## Interfaces

Enter 5 at the Advanced Menu. The Interfaces Menu appears. This menu provides the following options...



- **List Interfaces.** Enter 1 at the Interfaces Menu. The List Interfaces Menu appears. This menu displays defined interfaces. Press <ENTER> to view the next page of the list.
- **Configure Ethernet Interface.** Enter 2 at the Interfaces Menu. The Configure Ethernet Interface Menu appears. This menu provides the following options...
- **Configure IP Address.** Enter 1 at the Configure Ethernet Interface Menu. The Configure IP Address Menu appears. This menu allows you to assign IP data and interface status to either Ethernet interface. Options include...

§ Interface Name [eth0 / eth1] § IP Address Type [static / dynamic]

§ IP Address § Subnet Mask

§ Broadcast § MTU

§ Status [up / down]

- **Configure MAC, Speed & Type.** Enter 2 at the Configure Ethernet Interface Menu. The Configure Mac Speed & Type Menu appears. This menu allows you to assign MAC address variables to either Ethernet interface.

§ Interface Name [eth0 / eth1] § Speed [10 / 100 / auto]

§ MAC Address § Type [full / half / auto]

**Main Menu=>Advanced=>**

Interfaces (continued)

- **Configure ATM Interface.** Enter 3 at the Interfaces Menu. The Configure ATM Interface Menu appears. This menu allows you to configure an ATM interface. Enter the desired ATM interface name. A menu presents additional variables...

§ Interface Name [ atm[0-7] ]	§ Broadcast
§ IP Address Type [static / dynamic]	§ Alias Address
§ IP Address	§ MTU
§ Subnet Mask	§ Status [up / down]

- **List DNS & Default Gateway.** Enter 4 at the Interfaces Menu. The List DNS & Default Gateway Menu appears. This menu displays currently configured DNS and default gateway server information.
- **Configure DNS & Default Gateway.** Enter 5 at the Interfaces Menu. The Configure DNA & Default Gateway Menu appears. This menu allows you to set DNS and default gateway variables. When the router functions as a Network Address Port Translation (NAPT) device, the router uses DNS relay settings. With these settings, the router forwards DNS requests from a LAN node to a known DNS server. Normally, the requests arrive at a DNS server over the WAN link. See DNS variables below.

To configure a DNS and default gateway, set the following parameters...

DNS & Default Gateway Parameters

DNS Term	Definition
Domain Name	Internet site address that the router is a group of (i.e. usr.com).
	IP address of the Primary DNS that the router will use. Domain Name Server (DNS) is a server with a database. This server translates a domain name into the corresponding IP address. For example, USR.com resolves into IP address 231.222.320.04. Use this address to communicate over the LAN between the node and web site USR.com.
Secondary DNS Server	IP address of the Secondary DNS that the router will use.
Gateway	IP address of the Default Gateway the Router is to use.
DNS Relay	Enabling or Disabling router ability to convey a DNS request from a LAN node. In this case, the node is on a DNS server at the WAN link.

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save &

Reboot Menu appears. From this menu, save your changes and reboot the router.

- **List ARP Table.** Enter 6 at the Interfaces Menu. The List ARP Table Menu appears. This menu displays ARP table values.
- **Delete ARP Entry.** Enter 7 at the Interfaces Menu. The Delete ARP Entry Menu appears. This menu allows you to delete ARP table values. Enter the IP address of the ARP table value that you desire to delete.
- **Flush ARP Table.** Enter 8 at the Interfaces Menu. The Configure DNA & Default Gateway Menu appears. This menu allows you to flush ARP table values.

**Main Menu=>Advanced=>**

## **Interfaces** *(continued)*

- **List Nat Information.** Enter 9 at the Interfaces Menu. The List NAT Information Menu appears. This menu displays currently configured NAT variables. If you see a 'NAT Not Configured' message, it means that you haven't defined any variables.
- **Configure Nat.** Enter 10 at the Interfaces Menu. The Configure DNA & Default Gateway Menu appears. This menu allows you to enable Nat on specific interfaces. Set "Enable Nat" to yes or no. If you set it to yes, then select one of these interface options...

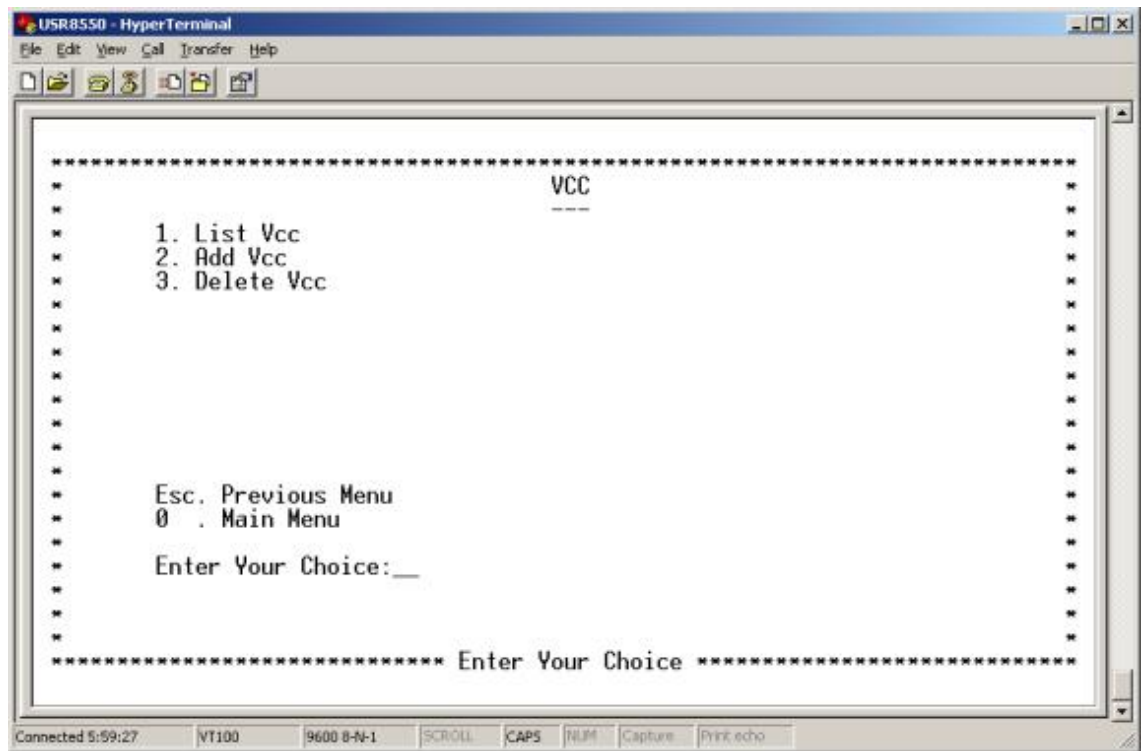
§ eth1	§ ppp [0-7]
§ atm	§ mer0

**Main Menu=>Advanced=>**

## **VCC**

Enter 6 at the Advanced Menu. The VCC Menu appears. This menu allows you to list, add, list, or delete VCC.





- **List VCC.** Enter 1 at the VCC Menu. The List VCC Menu appears. This menu displays defined VCC variables.
- **Add VCC.** Enter 2 at the VCC Menu. The Add VCC Menu appears. This menu allows you to add VCC variables. Enter VPI, VCI, encapsulation, and service. Afterward, the system presents additional options. Here is an example of settings for a UBR. Other service options present similar variables. To add VCC variables, set these interface options...

§ Vpi [0-255]	§ Peak Cell Rate {cells/sec}
§ Vci [0-65,535]	§ Average Cell Rate {cells/sec}
§ Encapsulation Type [aa15]	§ Burst Size {in cells}
§ Service [cbr/rtvbr/nrtvbr/ubr]	§ CDVT {in micro sec}

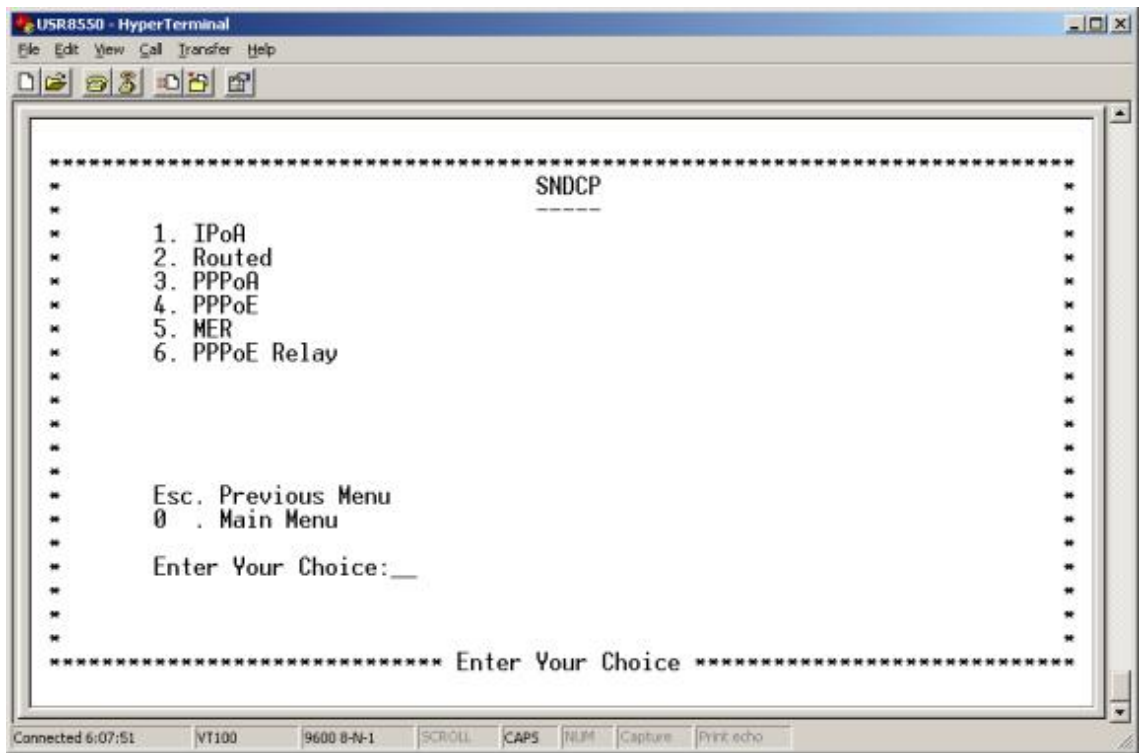
After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **Delete VCC.** Enter 3 at the VCC Menu. The Delete VCC Menu appears. This menu Allows you to delete VCC variables.

**Main Menu=>Advanced=>**

## SNDTCP

Enter 7 at the Advanced Menu. The SNDTCP Menu appears. This menu provides the following options...



- **IPoA.** Enter 1 at the SNDSCP Menu. The IPoA Menu appears. This menu allows you to list IPoA variables. You can also configure IPoA variables by VCC and interface. To add IPoA variables, set these options...

\$ Vpi [0-255]	\$ Default PVC [Y/N]
\$ Vci [0-65,535]	\$ Next Hop IP Address
\$ Interface Name [ atm [0-7] ]	\$ Status [enable/disable]
\$ Encapsulation Type [aa15]	

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **Routed.** Enter 2 at the SNDSCP Menu. The Routed Menu appears. This menu allows you to list routed variables. You can also configure routed variables by setting these options...

\$ Vpi [0-255]	\$ Encapsulation Type [11c/vc]
\$ Vci [0-65,535]	\$ Status [enable/disable]
\$ Interface Name [ ATM [0-7] ]	

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

**Main Menu=>Advanced=>SNDSCP=>**

## PPPoA

Enter 3 at the Sndcp Menu. The PPPoA Menu appears. This menu provides the following options...

- **List PPPoA.** Enter 1 at the PPPoA Menu. The List PPPoA Menu appears. This menu displays configured PPPoA variables.
- **Configure PPPoA.** Enter 2 at the PPPoA Menu. The PPPoA Menu appears. This is a two-screen menu. Set these PPPoA variables...

Configure PPPoA, Screen 1	Configure PPPoA, Screen 2
§ Profile ID [0-7]	§ MTU [0-1,500]
§ Interface Name [ ppp [0-7] ]	§ Encapsulation Type [11c/vc]
§ Vpi [0-255]	§ Restart Time
§ Vci [0-65,535]	§ My IP Address
§ User Name	§ Peer IP Address
§ Password	§ Enable Nat [Y/N]
§ Authentication Protocol [pap/chap]	§ NetMask
§ MRU [0-1,500]	

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **Start PPPoA.** Enter 3 at the PPPoA Menu. The Start PPPoA Menu appears. This menu allows you to start a PPPoA session by entering the session's profile ID.
- **Stop PPPoA.** Enter 4 at the PPPoA Menu. The Stop PPPoA Menu appears. This menu allows you to stop a PPPoA session by providing the session's profile ID.
- **Delete PPPoA.** Enter 5 at the PPPoA Menu. The Delete PPPoA Menu appears. This menu allows you to delete a PPPoA session by entering the session's profile ID.
- **Default PPPoA.** Enter 6 at the PPPoA Menu. The Default PPPoA Menu appears. This menu allows you to make a PPPoA session the default session by providing the session's profile ID.

Main Menu=>Advanced=>Sndcp=>

## PPPoE

Enter 4 at the Sndcp Menu. The PPPoE Menu appears. This menu provides the following options...

- **List PPPoE.** Enter 1 at the PPPoE Menu. The List PPPoE Menu appears. This menu displays configured PPPoE variables.
- **Configure PPPoE.** Enter 2 at the PPPoE Menu. The Configure PPPoE Menu appears. This is a two-screen menu. Set these PPPoE variables...

Configure PPPoE, Screen 1	Configure PPPoE, Screen 2
§ Profile ID [0-7]	§ Restart Time
§ Interface Name [ ppp [0-7] ]	§ Mode [Auto/Direct]
§ Vpi [0-255]	§ Idle Timeout
§ Vci [0-65,535]	§ My IP Address
§ Encapsulation Type [11c/vc]	§ Peer IP Address
§ User Name	§ Service Name
§ Password	§ AC Name
§ Authentication Protocol [pap/chap/mschapv1/mschapv2]	§ Host Unique Tag [Y/N]
§ MRU [0-1,492]	§ Ether Address
§ MTU [0-1,492]	§ Enable Nat [Y/N]
§	§ SubnetMask

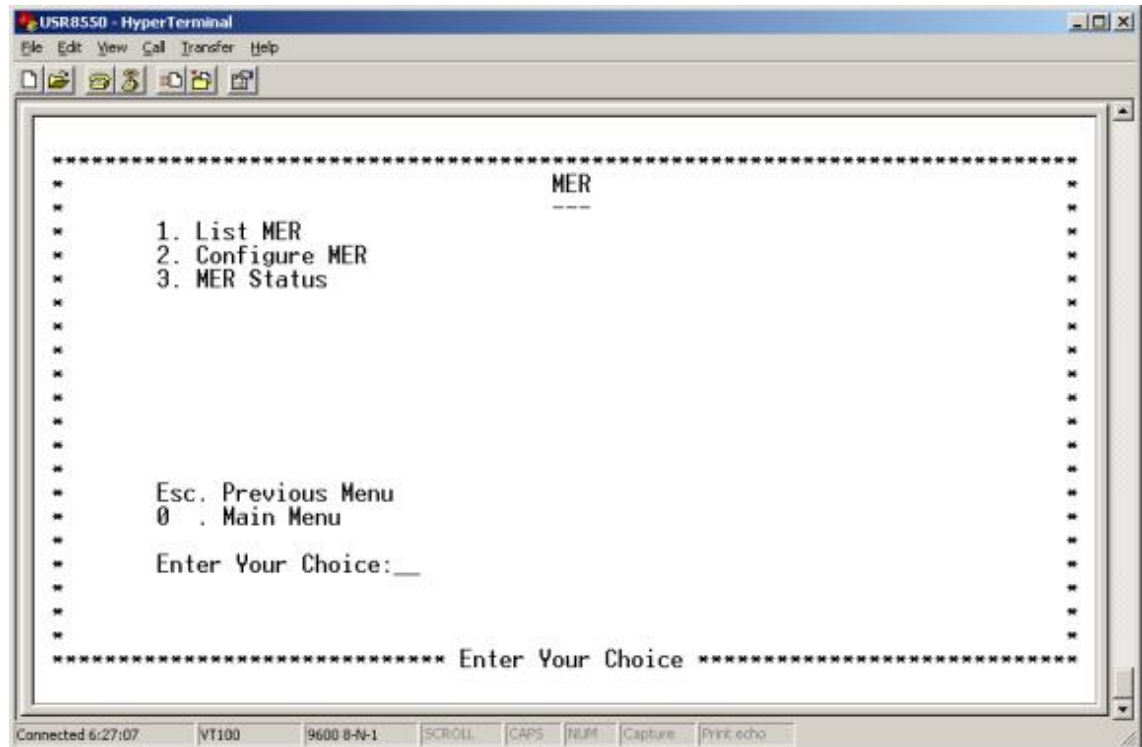
After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **Start PPPoE.** Enter 3 at the PPPoE Menu. The Start PPPoE Menu appears. This menu allows you to start a PPPoE session by entering the session's profile ID.
- **Stop PPPoE.** Enter 4 at the PPPoE Menu. The Stop PPPoE Menu appears. This menu allows you to stop a PPPoE session by providing the session's profile ID.
- **Delete PPPoE.** Enter 5 at the PPPoE Menu. The Delete PPPoE Menu appears. This menu allows you to delete a PPPoE session by entering the session's profile ID.
- **Default PPPoE.** Enter 6 at the PPPoE Menu. The Default PPPoE Menu appears. This menu allows you to make a PPPoE session the default session by providing the session's profile ID.

Main Menu=>Advanced=>SNDP=>

## MER

Enter 5 at the SNDP Menu. The PPPoE Menu appears. This menu provides the following options...



- **List MER.** Enter 1 at the MER Menu. The List MER Menu appears. This menu displays configured MER variables.
- **Configure MER.** Enter 2 at the MER Menu. The Configure MER Menu appears. This menu allows you to set MER variables. To configure MER variables, set these options...

§ Interface Name [mer0]	§ Vci [0-65,535]
§ Vpi [0-255]	§ Encapsulation Type [11c/vc]

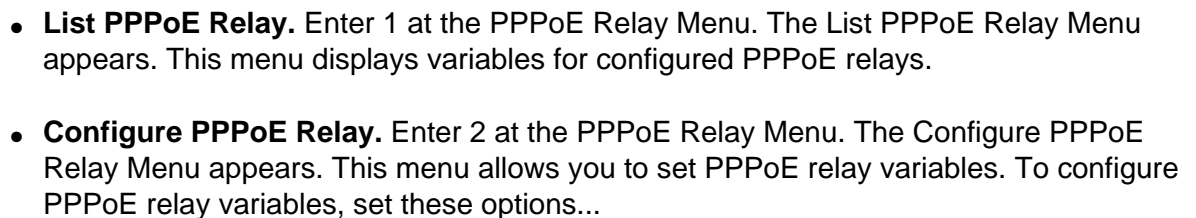
After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **MER Status.** Enter 3 at the MER Menu. The MER Status Menu appears. This menu allows you to change between enabled, disabled, or deleted status.

Main Menu=>Advanced=>SNDP=>

## PPPoE Relay

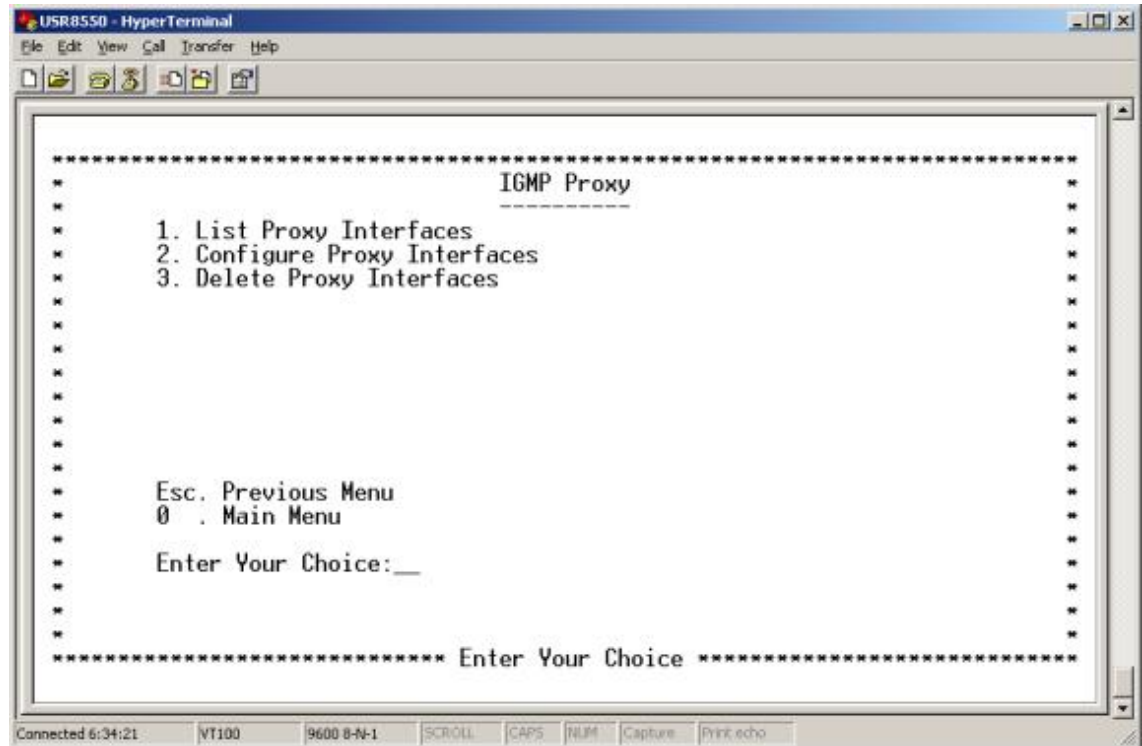
Enter 6 at the SNDP Menu. The PPPoE Relay Menu appears. This menu allows you to list,



After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- file:///P:/T\_WRITER/Documentation/Released/900...9003%20(Guiness)%20prac%20template/tquicks.htm (34 of 42) [11/6/2002 8:58:14 AM]





- **List Proxy Interfaces.** Enter 1 at the IGMP Proxy Menu. The List Proxy Interfaces Menu appears. This menu displays configured proxy interface variables.
- **Configure Proxy Interfaces.** Enter 2 at the IGMP Proxy Menu. The Configure Proxy Interfaces Menu appears. This menu allows you to set proxy Interface variables. To configure configure proxy interfaces, set these options...

§ Proxy Interface	§ Router Interface
eth [0-1] / ATM [0-7] / ppp [0-7]	eth [0-1] / ATM [0-7] / ppp [0-7]

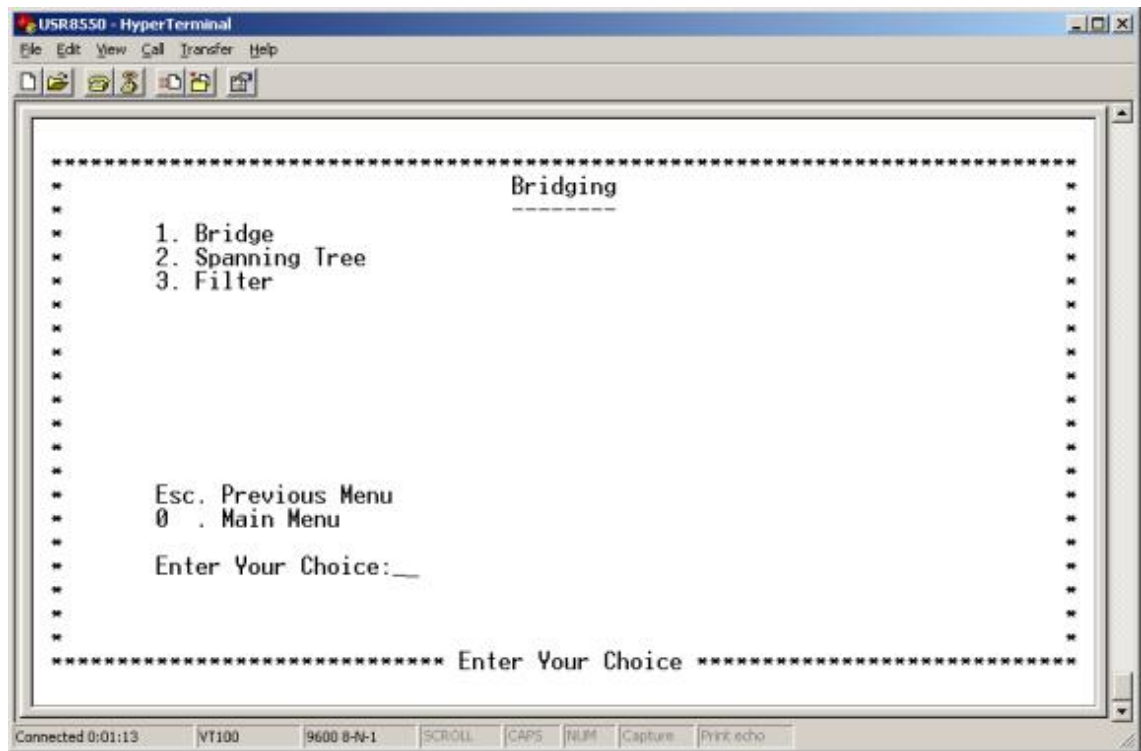
After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **Delete Proxy Interfaces.** Enter 3 at the IGMP Proxy Menu. The Delete Proxy Interfaces Menu appears. This menu allows you to delete proxy interfaces by providing a specific interface name.

**Main Menu=>Advanced=>**

## Bridging

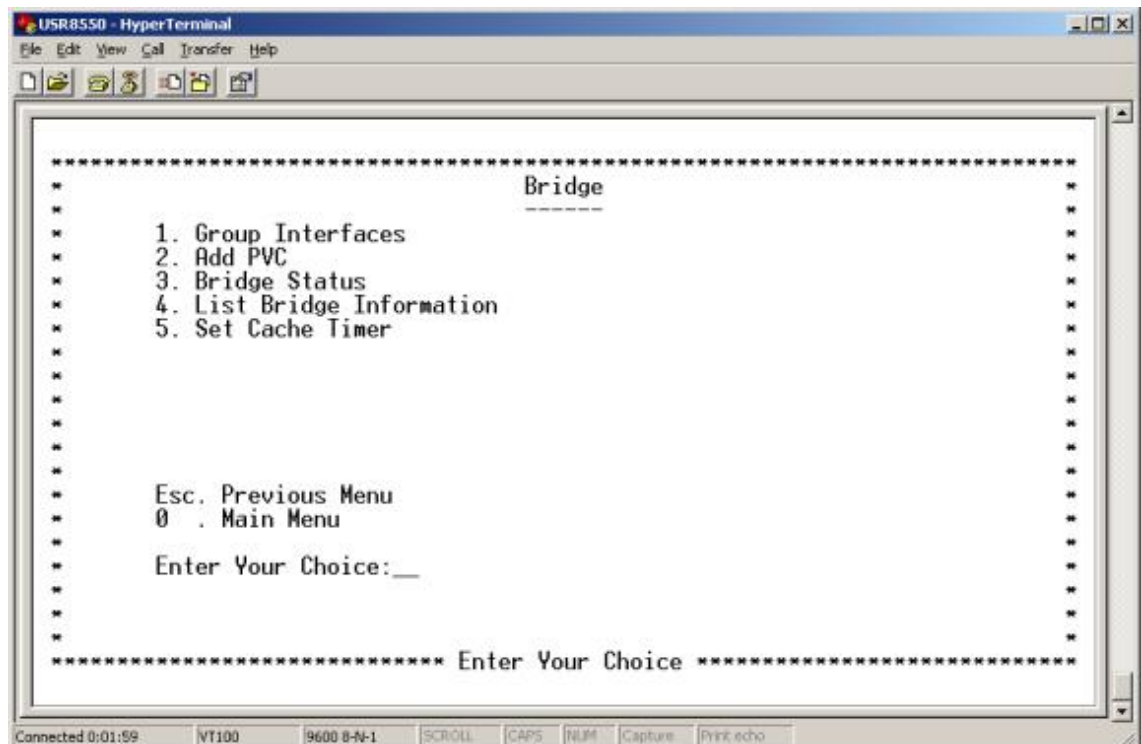
Enter 9 at the Advanced Menu. The Bridging Menu appears. This menu provides the following options...



Main Menu=>Advanced=>Bridging=>

## Bridge

Enter 1 at the Bridging Menu. The Bridge Menu appears. This menu provides the following options...



- **Group Interfaces.** Enter 1 at the Bridge Menu. The Group Interfaces Menu appears. This

menu allows you to enter interface names to group interfaces. For each interface, select an interface type. Each menu line item refers to another group interface. A line item looks like this...

Interface Name1 [ [eth [0-1] / ATM [0-7] / usb [0] ]

- **Add PVC.** Enter 2 at the Bridge Menu. The Add PVC Menu appears. This menu allows you to add a PVC by entering interface name, VCC, and encapsulation type variables.
- **Bridge Status.** Enter 3 at the Bridge Menu. The Bridge Status Menu appears. This menu allows you to change bridge status between enabled, disabled, and deleted.
- **List Bridge Information.** Enter 4 at the Bridge Menu. The List Bridge Information Menu appears. This menu displays configured bridge information. Press <ENTER> to view the next list page.
- **Set Cache Timer.** Enter 5 at the Bridge Menu. The Set Cache Timer Menu appears. This menu allows you to configure cache timer variables.

Main Menu=>Advanced=>Bridging=>

## Spanning Tree

**Spanning Tree.** Enter 2 at the Bridging Menu. The Spanning Tree Menu appears. This menu allows you to Provides the following options.

- **Configure Bridge Port.** Enter 1 at the Spanning Tree Menu. The Set Cache Timer Menu appears. This menu allows you to set these Spanning Tree Bridge Port variables...
- Interface Name [ eth[0-1]/ATM[0-7] ] • Link Cost
- Priority

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

Transparent bridges use the spanning tree algorithm to dynamically determine the best source-to-destination path. This algorithm avoids bridge loops (multiple paths linking one segment to another) within a network. The algorithm determines all redundant paths and makes only one of them active. The spanning tree protocol (STP) is part of the IEEE 802.1 standard.

- **Configure Bridge Parm.** Enter 2 at the Spanning Tree Menu. The Configure Bridge Parm Menu appears. To configure a spanning tree bridge from this menu, set the following parameters...

### Bridge Parameters

Bridge Term	Definition
Interface Name	Router interface to be configured for spanning tree.

Link Cost	Cost associated with that interface. Based on this cost, the bridge decides which link to forward data over. The options range from 0 to 65,535.
Port Priority	Determines which port becomes the root port. Options range from 0 to 255.
Bridge Priority	Determines which bridge becomes the root bridge. Options range from 0 to 65,000.
Max Age Time	All bridges in the bridged LAN use this timeout value. The root sets Max Age value. Options range from 1 to 60 seconds.
Hello Time	Time interval between generations of configuration BPDUs. The root generates configuration BPDUs. Options range from 1 to 10 seconds.
Forward Delay Time	All bridges in the bridged LAN use this timeout value. The root sets the forward delay value. Options range from 1 to 200 seconds.

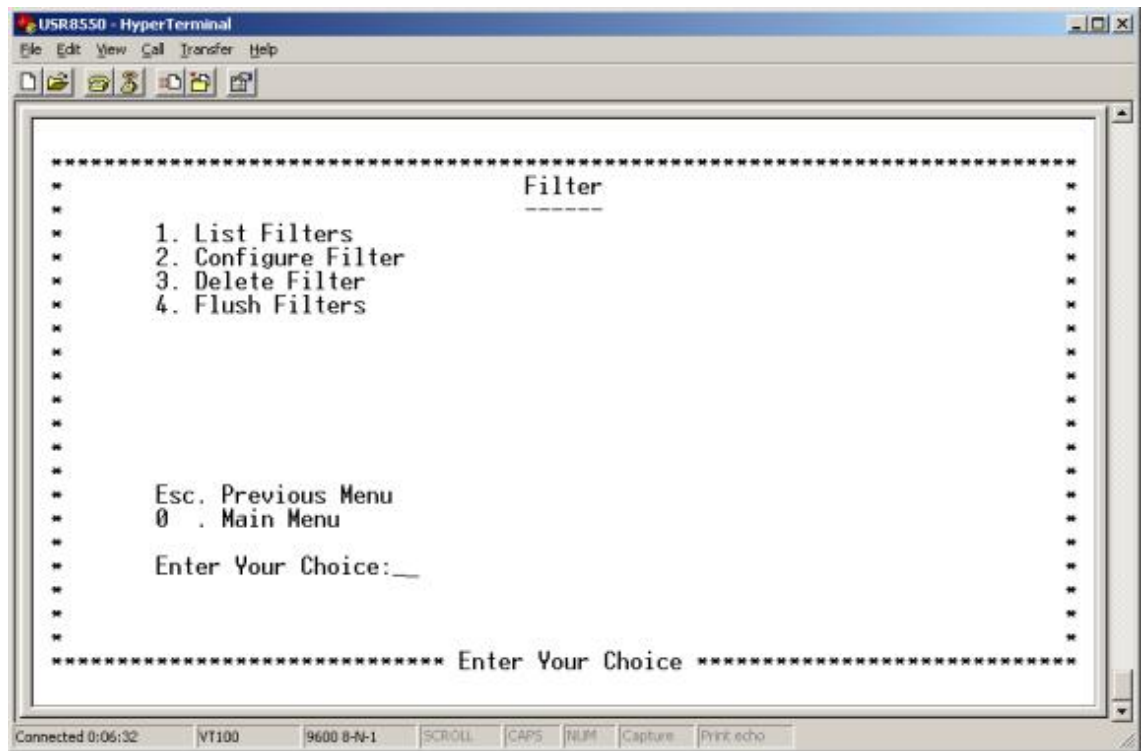
After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **Spanning Tree Status.** Enter 3 at the Spanning Tree Menu. The Spanning Tree Status Menu appears. This menu allows you to enable or disable Spanning Tree status.
- **List Spanning Tree Info.** Enter 4 at the Spanning Tree Menu. The List Spanning Tree Info Menu appears. This menu displays configured Spanning Tree variables.

**Main Menu=>Advanced=>Bridging=>**

## Filter

Enter 3 at the Bridging Menu. The Filter Menu appears. This menu allows you to list, configure, delete, or flush filters.



- **List Filters.** Enter 1 at the Filter Menu. The List Filters Menu appears. This menu displays defined filter variables.
- **Configure Filter.** Enter 2 at the Filter Menu. The Configure Filter Menu appears. This menu allows you to set filter variables. The MAC address is a unique serial number burned into Ethernet adapters. This address distinguishes this network card from others. MAC Filters allow or reject WAN access for specific machines. To configure a filter from this menu, set the following parameters...

#### MAC Parameters

MAC Term	Definition
MAC Address	Static MAC address to add to the table.
Filter Action	What the router should do with a data frame from this MAC address. The options are Forward or Drop.

After you complete your configuration, proceed to the Basic Menu and enter 8. The Save & Reboot Menu appears. From this menu, save your changes and reboot the router.

- **Delete Filter.** Enter 3 at the Filter Menu. The Delete Filter Menu appears. This menu allows you to delete filters by entering their MAC addresses.
- **Flush Filter.** Enter 4 at the Filter Menu. The Flush Filter Menu appears. This menu allows you to flush currently configured filters.

**Main Menu=>Advanced=>**

## Statistics

Enter 10 at the Advanced Menu. The Statistics Menu appears. This menu provides the following options...

- **Interface.** Enter 1 at the Statistics Menu. The Interface Menu appears. This menu displays interface statistics. The table below defines interface parameters.

***Interface Parameters***

Interface Term	Meaning
Interface Name	Name of the interface
Admin Status	Indicates whether the interface is up or down
Octets In	Number of received octets (in bytes)
Unicast PktsIn	Number of received unicast packets
Broadcast PktsIn	Number of received broadcast packets
Discards In	Number of received and discarded packets
Errors In	Number of received errors
Octets Out	Number of transmitted octets (in bytes)
Unicast PktsOut	Number of transmitted unicast packets
Broadcast PktsOut	Number of transmitted broadcast packets
Discards Out	Number of transmitted and discarded packets
Errors Out	Number of transmitted errors

- **TCP-IP.** Enter 2 at the Statistics Menu. The Interface Menu appears. This menu displays TCP/IP statistics.
- **DHCP-Lease.** Enter 3 at the Statistics Menu. The DHCP Lease Menu appears. This menu displays DHCP statistics. With no active DHCP leases, the list is empty.
- **AAL5.** Enter 4 at the Statistics Menu. The AAL5 Menu appears. This menu displays ATM AAL5 statistics.
- **SND CP.** Enter 5 at the Statistics Menu. The SND CP Menu appears. This menu displays packet information for the permanent virtual circuit (PVC). The system organizes the list by encapsulation method.
- **Bridge.** Enter 6 at the Statistics Menu. The Bridge Menu appears. This menu displays bridge statistics.

- **Firewall Statistics.** Enter 7 at the Statistics Menu. The Firewall Statistics Menu appears. This menu provides the following options...
- **Flow Statistics.** Enter 1 at the Statistics Menu. The Firewall Statistics Menu appears. This menu displays firewall flow statistics.
- **FTP Statistics.** Enter 2 at the Statistics Menu. The Firewall Statistics Menu appears. This menu displays FTP Proxy statistics.
- **HTTP Statistics.** Enter 3 at the Statistics Menu. The Firewall Statistics Menu appears. This menu displays HTTP Proxy statistics.

Main Menu=>Advanced=>

## Diagnostic

Enter 11 at the Advanced Menu. The Diagnostic Menu appears. To perform an OAM loopback test on a VCC, enter 1. To perform a ping test, enter 2.

```

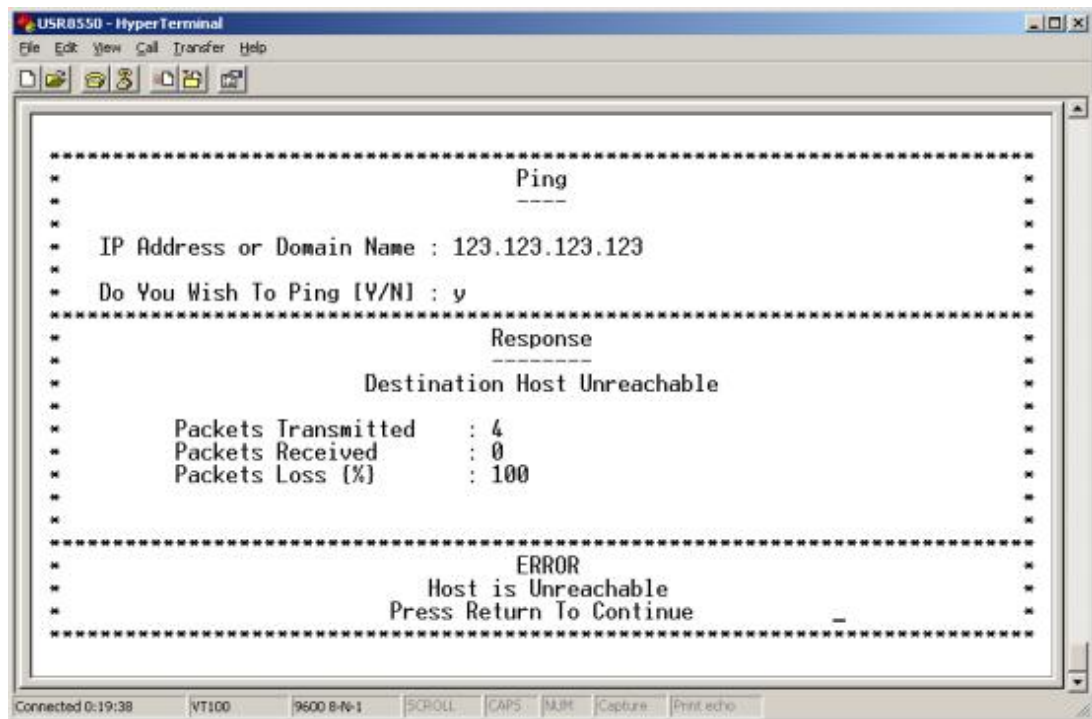
USR0550 - HyperTerminal
File Edit View Call Transfer Help
[Icons]

*****
*                                     *
*                               OAM Loopback                               *
*                               -----                               *
*                                     *
* Vpi [0-4095]      ( 0 ) :                                     *
* Vci [0-65535]    : 35                                         *
* Flow Type [seg/ete] : seg                                     *
* LLID :                                                    *
* [FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF]                          *
*                                     *
* Do You Want To Start OAM Loopback [Y/N] :                   *
* *****                                                    *
*               Mandatory, Enter Valid Value                  *
*               Value Should Be either Of [Y/N]               *
* ***** Press Esc To Break *****                        *
*                                     *
*****

Connected 0:18:20  VT100  9600 B-N-1  SCROLL  CAPS  NUM  Capture  Print echo

```





**Main Menu=>Advanced=>**

## Version

Enter 12 at the Advanced Menu. The Version Menu appears. This menu provides software version information for your router.



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Windows 95, 98, NT 4.0, Me, 2000, XP or later, Mac and Linux

## Command Line Interface

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## [CLI Menu System](#)

### Command Summary

#### 1 CLI Reference

Command Line Interface (CLI) is used to configure the system via Telnet. To enter the CLI you must Telnet into the modem at the modem's Management IP address (default 192.168.1.1). The default username is **root**. The default password is **12345**.

All the system commands for various modules are organized in different directories. All these directories are put under the directory called **home**. However, they can be listed by running *help* command. All the administration commands are located under the **home/users**.

Upon logging into CLI the user enters into the default directory, **home**. The current working directory includes the login name in the command prompt (ex. [root @ home]\$ )



## ***1.1 Control Commands***

The CLI provides commands for navigating between directories, listing the commands in a directory, and providing help. Any of these commands may be executed from any directory.

### **1.1.1 help**

`help -o <command>`

Displays help and usage text for the specified command. If nothing is specified, it displays help text for all general commands.

### **1.1.2 home**

`home`

This command changes the working directory to home directory.

### **1.1.3 exit**

`exit`

If the user is working in the home directory, the session is closed. Otherwise **exit** changes the working directory to its immediate parent directory.

### **1.1.4 ls**

ls

Lists all the commands available in the current working directory.

## ***1.2 Administration***

### **1.2.1 reboot**

reboot

Reboots the modem (note: telnet session is lost).

### **1.2.2 save**

save

Saves the current running configuration into memory. The current setting will remain saved when the modem is rebooted.

### **1.2.3 version**

version

Displays the version number of the modem's firmware.

### 1.2.4 **date**

**date**

Displays the current date and time settings.

**date -o date MM:DD:YYYY time H:M:S**

Sets the specified date and time.

### 1.2.5 **erase**

**erase**

Erases the current stored configuration. The currently used settings are not altered. The next time the system is rebooted, the system will have its default (factory) settings.

**Warning:** Do not use the save command after the erase command unless the erase command was performed in error.

### 1.2.6 **bitmap**

This will show the allocation status of bitmaps like sockets, mbufs, and clusters.

## 1.3 **user**

To create, remove, list and change user settings, type **users** from the home directory

[root @ user ] \$

The **ls** command will list five options:

- adduser
- remuser
- setperms
- chpasswd
- listusers

### 1.3.1 adduser

**adduser** <username> -o -permissions <A= admin | O= ordinary>

Adds new access user to the system. This command requires that a password be provided. This is an administrative command and you must be logged in with administrative rights.

#### **<username>**

The name of the user to be added.

#### **-permissions <admin | ordinary>**

Specifies the permissions granted to the user. By default the user is granted ordinary permissions.

### 1.3.2 remuser

**deluser** <username>

Deletes the specified access user. This is an administrative command and you must be logged in with administrative rights.

### 1.3.3 setperms

**setperms {username} [-o permissions ( A )]**

Modifies the properties of a user account.

**<username>**

The name of the user whose services or permissions are to be modified.

**<permissions>**

**O – ordinary user, A – Administrator**

### **Examples:**

Change user xyz from ordinary user to Administrator.

```
setperms xyz -o A
```

### **1.3.4 changepasswd**

**changepasswd <username>**

Changes password of the existing user. To use this command you must be logged as an Administrator.

### **1.3.5 listusers**

**listusers**

Lists all registered users to use CLI/http/ftp.

## 1.4 *ifconfig*

The `ifconfig` command contains several forms to obtain information or configure an IP address for an interface. The first form configures the IP address and other parameters for the specified interface. The remaining forms display information about the interface(s).

```
ifconfig -o <interface_name> inet <address> [netmask <mask>] [broadcast <addr>]  
[up|down] [mtu <n>]
```

```
ifconfig -o <interface_name>
```

```
ifconfig -o -a
```

```
ifconfig -o -l
```

**<interface\_name>** The name of the interface. Possible values are “eth0”, “eth1”, “mer0”, “usb0”, “lo0”, “atm0”, “atm1”, “atm2”, “atm3”, “atm4”, “atm5”, “atm6”, “atm7”, “ppp0”, “ppp1”, “ppp2,” “ppp3”, “ppp4”, “ppp5”, “ppp6”, “ppp7”.

### **<address>**

The IP address to be assigned to the interface. Dot-notation is used to enter the IP address (for example 192.168.2.1).

### **netmask <mask>**

The netmask is used to extract the network part from the IP address. It also specifies how much of the address is to be reserved for subdividing the network into sub-networks that are taken from the host field of the address. Netmask is ‘AND’ed with the interface IP address to get the network ID

that is used in routing, indicating that this network is reachable through these interfaces. The mask can be specified as a single hexadecimal number with a leading 0x, for example 0xffffffff00, or with a dot-notation Internet address of 255.255.255.00

### **broadcast <addr>**

Broadcasting is used when it makes sense to send the same message to multiple recipients on the LAN. This option is used to specify the broadcast address to be used in the network. The default broadcast address is the address with a host part as all 1's in the IP address. For example, 192.168.2.255 is a broadcast address for network 192.168.2.0

### **down**

Mark an interface "down". When an interface is marked "down", the system will not attempt to transmit messages through that interface.

### **up**

Mark an interface "up". This may be used to enable an interface after an interface was marked as "down". By enabling the interface, messages can be transmitted through that interface.

### **mtu <n>**

Sets the maximum transmission unit of the interface to n, the default is interface specific. The MTU is used to limit the size of packets that are transmitted on an interface. Not all interfaces support setting the MTU, and some interfaces, like ethernet, have range restrictions (72 – 1500).

### **-a**

Displays detailed information about all the interfaces.

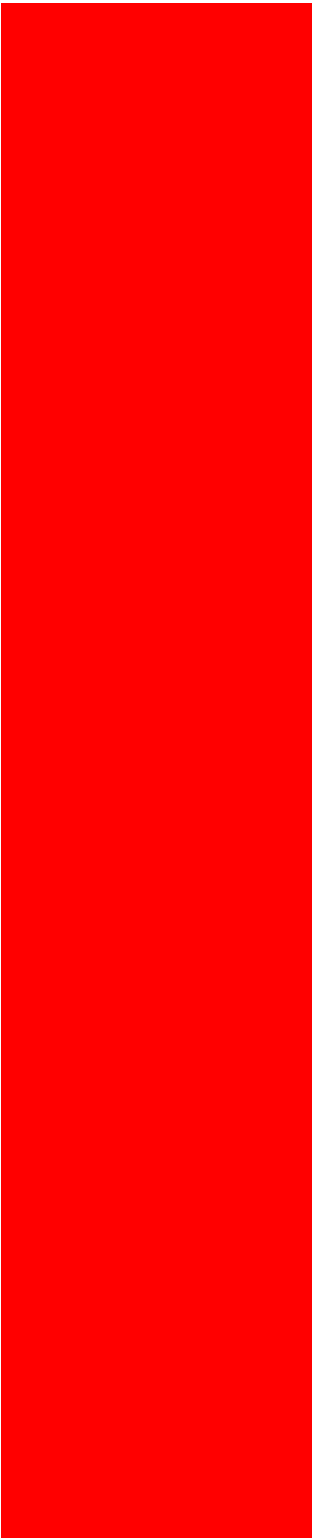
### **-l**

Lists the current interfaces.

### **Examples:**

```
[root @ home] ifconfig -o -a
eth0: flags=ffff8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST>
mtu 1500 inet 192.168.2.185 netmask 0xffffffff broadcast 192.168.2.255
```



A large red rectangular area on the left side of the page, used for redaction.

```
ether 08:00:20:c0:c9:74
```

```
lo0: flags=ffff8049<UP,LOOPBACK,RUNNING,MULTICAST> mtu 16384
```

```
inet 127.0.0.1 netmask 0xff000000
```

The above command lists all the interfaces.

```
ifconfig -o -l
```

Displays a list of interfaces. It will result in a listing such as "eth0 atm0."

```
ifconfig -o eth0
```

```
eth0: flags=ffff8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST>
```

```
mtu 1500 inet 192.168.2.185 netmask 0xfffff00 broadcast 192.168.2.255
```

```
ether 08:00:20:c0:c9:74
```

The configuration of eth0 is listed.

```
ifconfig -o eth0 inet 192.168.2.242
```

Set the IP address on eth0 to 192.168.2.242

```
ifconfig -o eth0 inet 192.168.2.185 mtu 900
```

Changes the MTU for the eth0 interface.

```
ifconfig -o eth0 inet 192.168.2.185 broadcast 192.168.255.255
```

Changes the broadcast address

```
ifconfig -o eth0 inet 192.168.2.185 netmask 255.255.00.00
```

Changes the netmask.

```
ifconfig -o eth0 inet 192.168.2.185 down
```

Marks the interface as down.

```
ifconfig -o eth0 inet 192.168.2.185 up
```

Marks the interface as up.

```
ifconfig -o eth0 inet 192.168.2.185 alias 192.168.2.242
```

```
ifconfig -o eth0 inet 192.168.2.185 broadcast 192.168.255.255 netmask
255.255.00.00 mtu 900
```

Sets the broadcast address, netmask and mtu for the eth0 interface.

### *1.5 route*

Allows the user to add, delete, and change a routing entry or allows the user to get information about an entry.

```
route add -o -dest <dest_ip_addr> -gateway <gateway_ip_addr> [-netmask mask] [-mtu value] [-
hopcount value]
```

```
route add -o -dest <dest_ip_addr> -interface if_name [-netmask mask] [-mtu value] [-hopcount
value]
```

```
route delete -o -dest <dest_ip_addr>
```

```
route change -o -dest <dest_ip_addr> -gateway <new_ip_addr>
```

```
route get -o -dest <dest_ip_addr>
```

```
route flush
```

```
list routes
```

**route add** is used to add a routing entry. The destination address and the gateway to reach this destination address must be specified. The **netmask** will be computed based upon the class of the destination address if it is not specified. For example, a netmask of 255.255.255.0 will be taken for a destination address of 192.168.3.0 since this is a class C address. If the destination is directly reachable via an interface requiring no intermediary system to act as a gateway, the **interface** modifier should be specified. The gateway given is the address of this host on the common

network, indicating the interface to be used for transmission. Alternately if the interface is point-to-point, the name of the interface itself may be given. In this case the route remains valid even if the local or remote addresses change.

**route delete** is used to remove routing entries.

**route change** is used to change the gateway for the specified destination address.

**route get** is used to get information for routes to the specified destination.

**route flush** will erase all routing table entries.

**list routes** will list all routing table entries.

### Examples:

```
route add -o -dest 192.168.3.0 -gateway 192.168.2.1
```

Adds a route entry with destination IP address 192.168.3.0 and gateway as 192.168.2.1.

```
route add -o -dest 192.168.3.101 -gateway 192.168.2.1 -interface eth0 -netmask  
255.255.255.255 -mtu 1500 -hopcount 2
```

Adds a route entry with destination ip address set to 192.168.3.101, gateway as 192.168.2.1 and interface name to be used for this route as eth0, netmask as 255.255.255.255, mtu as 1500 and hopcount to 2.

```
route delete -o -dest 192.168.3.0
```

Deletes the route entry whose destination IP address is 192.168.3.0.

```
route change -o -dest 192.168.3.0 -gateway 192.168.2.4
```

Changes the gateway to 192.168.2.4 for the entry whose destination addresses match with 192.168.3.0.

```
route get -o -dest 192.168.3.0
```

Lists the route entry whose destination IP address is 192.168.3.0.

## ***1.6 statistic***

statistic <ip | tcp | udp | icmp>

Displays statistics for IP, ICMP, TCP and UDP protocols.

## ***1.7 list***

list <arp | udp | tcp | routes | interfaces>

Lists the Address Resolution Protocol (ARP) Table, Routing Table, and Protocol Control Blocks (PCB) of UDP/TCP sockets in use and the network interfaces information.

## ***1.8 dns***

To set the Domain Name Server.

Commands for setting DNS parameters are in the .dns. directory. From the .home. directory, type **.dns.** to enter the directory.

### ***1.8.1 set***

set -d <domain\_name>

set [-n1 <name\_server>] [-n2 <name\_server>]

Sets DNS entries for the system. The **domain\_name** specifies the name of this domain for the

router. The **name\_server** specifies the IP address of the server resolving DNS requests. To clear a domain entry, specify double quotes (") for the domain name. To clear the name server entry, specify 0 as the name server.

**-n1 <name\_server>**

Used to specify the primary name server.

**-n2 <name\_server>**

Used to specify the secondary name server.

**Examples:**

```
[cli @ dns]$ set -d analog.com
```

Sets the domain name to "analog.com".

```
[cli @ dns]$ set -d ""
```

Removes the domain name.

```
[cli @ dns]$ set -n1 137.23.41.2
```

Sets the primary name server for DNS queries.

```
[cli @ dns]$ set -n1 0
```

Removes the primary name server.

## 1.8.2 list

list

Lists DNS domain name and name server.

## 1.8.3 dnssr

Enables/Disables the DNS relay function.

```
dnssr start -o [<server1>] [<server2>]
```

`dnssr stop -o [<server1>] [<server2>]`

**start**

Starts the DNS relay function

**stop**

Stops the DNS relay function.

**<server1>**

IP address of the primary DNS server.

**<server2>**

IP address of the secondary DNS server.

### 1.8.4 help

Set and List domain/nameserver

list

set [-d] ( default domain ) value

set [-n1 / -n2] ( nameserver ) value

## 1.9 DHCP

`dhcp <interface> start | stop | restart`

Configures an interface to fetch its IP address from a DHCP server. The **start** option enables the interface to get the IP address from the DHCP server. The **stop** option disables this feature.

The **restart** option will stop and then start again negotiation with the DHCP server for an IP address. Restart is useful to reacquire an IP address.

**Example:**

`dhcp eth0 start` (note for the USR9003 eth0 is equal to port ETH1 and eth1 is equal to port ETH2)

## ***1.10 DHCPSEVER***

The DHCP server commands are located in the “dhcpserver” directory.

### **1.10.1 start**

Starts the DHCP server

### **1.10.2 stop**

Stops the DHCP server.

The **subnet** and **host** commands are used to configure DHCP server. These commands are available in the dhcpserver directory.

### **1.10.3 subnet**

Configuration of DHCP to serve the specified IP addresses. The **add** option is used to specify the IP addresses and other aspects of the configuration. The **list** option shows the configured subnets. The **delete** command removes the serving of the specified subnet. These commands take effect after the **start** command has been issued. These commands are available in the dhcpserver directory.

subnet if add -o -subnet <subnet> [-netmask <mask>] -startip <startip> -endip



**<endip>** [-leasetime <lease time in days>] [-broadcast <broadcast-address>] [-dns <name-server>][[-gateway <gateway-address>] [-server <serverip>] [-file <filename>]

**-subnet <subnet>** The subnet that the server will serve IP addresses on.

**-netmask <mask>** The subnet mask for the subnet that the server will serve IP addresses on.

**-startip <startip> -endip <endip>** The range of IP addresses that will be served. The **startip** and **endip** define this range with the beginning and ending IP addresses to be served. These addresses are specified in dot notation.

**-gateway <gateway-address>** The IP address of the gateway. This information is passed to the DHCP clients that they use for a default route entry. By default the IP address of this router is passed to the DHCP clients as the gateway.

**-leasetime <leasetime>** The amount of time the DHCP lease of the IP address will last. This is specified in days. The default is 7 days.

**-broadcast <broadcast-address>** The IP broadcast address that the server will listen to for DHCP requests. By default, a standard broadcast address for the subnet is used.

**-dns <name-server>** The IP address of the DNS server that should be passed to DHCP clients. By default, the dns address configured on the WAN interface from the Internet Service Provider (via DHCP server or PPPoA/PPPoE) is used.

**-server <server> -file <filename>** These options are used to support Bootp clients. The client will go to the specified **server** to retrieve the specified **file** as the boot image. The 6489 based router does not support storage of a file for a remote client to boot from, so the server specified will be another machine on the network.

subnet if list

subnet if delete

### Examples:

```
subnet add eth0 -o -subnet 192.168.5.0 -startip 192.168.5.200 -endip 192.168.5.210 \
-leasetime 3 -dns 192.168.5.7
```

IP addresses will be assigned to up to 11 DHCP clients. The IP addresses assigned will begin with 192.168.5.200 and end with 192.168.5.210. The length of the IP address assignment (the lease) is 3 days. The address of the DNS server (192.168.5.7) will also be sent to the DHCP clients.

subnet delete eth0 subnet 192.168.5.0

The DHCP server will no longer serve addresses for the 192.168.5.0 network.

#### 1.10.4 host

These commands control the configuration of specific hosts and are useful when specific machines need to have permanent IP addresses assigned. The **host** commands have precedence over **subnet** commands. The **add** option is used to specify the IP address for a particular host. The **list** option shows the configured hosts. The **delete** option will remove a host configuration. These commands are available in the dhcpserver directory.

```
host add -o -macaddr <mac-address> -ipaddr <ipaddr> [-leasetime <lease time>]
[-broadcast <broadcast-address>] [-dns <name-server>] [-gateway <gateway-address>]
[-server <server-name>] [-file <filename>]
```

```
host delete -o -macaddr <mac_address>
```

```
host list
```

#### Examples:

```
host add -o -macaddr 00.00.00.d1.26.95 -ipaddr 192.168.5.34
```

Specifies that the machine with the MAC address of 00.00.00.d1.26.95 will be assigned the IP address 192.168.5.34.

```
host delete -o -macaddr 00.00.00.d1.26.95
```

Removes this host configuration for the machine with the MAC address of 00.00.00.d1.26.95.

#### 1.10.5 lease

Leases represent which IP addresses are allocated to which machines and for how long. The **list** option lists all outstanding leases.

lease list

lease delete -o -ipaddr <ipaddr>

## ***1.11 RIP***

RIP is a protocol that automatically updates the routing entries on the system. This is done by cooperating with other nearby routers. The RIP commands are located in the “rip” directory. Two commands are available: **rip** and **ver**. In order for any configuration changes to take effect, the configuration must be saved (with “save” command) and the system rebooted.

### **1.11.1 rip**

**rip** starts and stops automated updates of routing tables. When RIP is enabled, the system communicates with other routers in the network to update and maintain the IP routing tables. By default, RIP is not enabled. If RIP is enabled but no version is specified, RIP version 1 is used. This command is available in the “rip” directory.

rip -o <on|off>

**on**

Enables RIP processing.

**off**

Disables RIP processing.

### **1.11.2 ver**

Specifies the version of the RIP protocol that will be used. The permissible values are **1** or **2**. The default is **1**.

ver -o <1|2>

### 1.11.3 list

Lists the routes currently available.

list

**Note:** For these new values to take effect, the configuration must be saved. The next time the system is booted, these values will be in effect.

## 1.12 Bridge

The bridge commands are located in the “bridge” directory.

### 1.12.1 group

group <interface\_name> <interface\_name> -o -if <interface\_name> -if <interface\_name>

Assigns or groups two or more interfaces to the bridge.

**interface\_name** The name of an interface e.g. **eth0**, **eth1**, **atm0**, **atm1** etc.

Examples:

bridge group eth0 -o -if eth1 -if usb0 -if atm1

The interfaces eth0, eth1 and usb0 are assigned to the bridge atm1.

bridge group eth0 -o -if atm0

The interfaces eth0, and atm0 are assigned to the bridge.

### 1.12.2 pvc

```
pvc add <port> <vpi> <vci> <encap> -o [-vpn <OUI> <vpnId>]
pvc delete <port> <vpi> <vci> <encap>
```

Attaches a PVC to the wan interface.

**Add** Adds the specified PVC to the bridge.

**Delete** Deletes the specified PVC to the bridge.

**<port>** A string identifying the wan interfaces e.g. atm0.

**<vpi> <vci>** Virtual Path Identifier and Virtual Circuit Identifier for the ATM connection.

**<encap>** Specifies the encapsulation type. The possible values are **llc** or **vc** which represent Logical Link Control or VC multiplexing respectively.

**-vpn <OUI> <vpnId>** Specifies the VPN encapsulation. The **OUI** (Organizationally Unique Identifier) and VPN identifier are specified as numbers.

### 1.12.3 cachetimer

```
cachetimer <timeout>
```

Specifies the idle timeout for bridge table entries. The timeout value is in seconds.

Whenever there is any traffic passing through the bridge, the bridge will maintain the lookup table with the MAC addresses coming from configured interface (through LAN). If the traffic is destined to any MAC address that is found in the lookup table, that packet is not sent to the ATM interface. If there is no traffic from a particular machine for a certain time period, then that entry is deleted from the lookup table. The time that the bridge will clear the bridge lookup entry is the cachetimer timeout.

### 1.12.4 setmultiport

```
setmultiport enable | disable
```

Enables or disables flooding between ATM PVCs.

### 1.12.5 list

list

Lists bridge parameters.

### 1.12.6 stats

stats

Displays bridge statistics.

### 1.12.7 bridge

bridge enable | disable | delete

Enables, disables, or deletes the configuration of the bridge.

### 1.12.8 filter

filter <action> <mac\_address> -o [-fwd | -drop]

Configures the filtering capability of MAC addresses for the bridge. Up to 128 addresses may be specified.

**<action>** Action may be **add**, **delete**, or **modify**.

**<mac\_address>** The MAC address that is to be filtered. The address is specified by a hex code for each byte separated by a colon (:). For example: 00:01:33:44:5F:2C.

**-fwd** When specified, the frame will be forwarded. This is the default.

**-drop** When specified, the frame will be dropped.

Examples:

filter add 1:2:3:4:5:6

Forward packets whose MAC destination address is 1:2:3:4:5:6.

filter add 2:3:4:4:5:2 -o -fwd

Forward packets whose MAC destination address is 2:3:4:4:5:2.

filter add 11:22:33:44:55:66 -o -drop

Drop packets whose MAC destination address is 11:22:33:44:55:66  
filter delete 1:2:3:4:5:6  
Remove the filter action for MAC address 1:2:3:4:5:6  
filter modify 2:3:4:4:5:2 -o -drop  
Change the filter action for MAC address 2:3:4:4:5:2 to drop.

### **1.12.9 filterlist**

filterlist  
Lists the contents of the filter database.

### **1.12.10 filterflush**

filterflush  
Flush the dynamic entries of the filter database.

### **1.12.11 stp**

The spanning tree commands are located in the “stp” directory (which is located in the “bridge” directory).

## ***1.13 ethernet***

Ethernet commands are located in the “ethernet” directory.

### **1.13.1 elink**

elink <interface> -o [[auto] | [10 | 100 | auto\_speed ] | [half | full | auto\_duplex]]

Configures the speed and/or duplex of the Ethernet interface. The default setting is **auto** for auto



negotiation. With auto negotiation, both the speed and duplex are configured based upon what the link is connected to. It is also possible to configure the duplex and specify **auto\_speed** so that only the speed is auto negotiated. Similarly for **auto\_duplex**.

**<interface>** The name of the Ethernet interface. This is **eth0**.

**Auto** Specifies that both the speed and duplex are auto negotiated.

**10** Specifies that the speed is set to 10M bits per second.

**100** Specifies that the speed is set to 100M bits per second.

**auto\_speed** Specifies that the speed is auto negotiated.

**Half** Specifies half duplex

**Full** Specifies full duplex

**auto\_duplex** Specifies that the duplex is auto negotiated.

Examples:

```
[root @ ethernet]$ elink eth0 -o 10 half
```

Sets the Ethernet to a speed of 10Mbps half duplex.

```
[root @ ethernet]$ elink eth0 -o auto_speed full
```

The speed will be auto negotiated and the link will use full duplex.

### 1.13.2 setemac

setemac <mac address>

Sets the Ethernet addresses for the eth0 port. The Ethernet MAC address is specified in standard colon-separated notation.

In order for the MAC changes to take effect, the configuration must be saved (using 'save' command in the home directory) and the system rebooted.

**<mac address>** The MAC address in colon separated notation. Two hex digits must be supplied between the colons. Twelve hex digits comprise a MAC address. (i.e. "aa:bb:cc:01:22:05").

Examples:

```
[root @ ethernet]$ setemac 11:22:33:44:55:66
```

```
[root @ ethernet]$home
```

```
[root @ home]$save
```

The above will assign 11:22:33:44:55:66 to eth0. This will take effect after the system is rebooted.

### 1.13.3 rmon

rmon <interface>

This command reads the EMAC RMON counters.

**<interface>** The name of the Ethernet interface. This is **eth0**.

Example:

```
[cli @ home]$ rmon eth0
```

Hardware link statistics

Rx frames : 276423

Rx octets : 53008763

Rx interrupts: 275055

Rx CRC errors: 4

Rx frame errors: 12

Rx internal errors: 0

Rx length errors: 268460

Rx resource events: 0

Tx frames: 4093

Tx octets: 456264

Tx interrupts: 4064

Tx SQE errors: 0

Tx carrier sense errors: 0

Tx deferred: 0

Tx excessively deferred: 0

Tx single collisions: 0

Tx multiple collisions: 0

Tx late collisions: 0

Tx internal errors: 0

Hardware interrupts: 548692

### 1.13.4 pread

pread <interface> <port(decimal)>

Reads PHY register

Examples:

```
[root @ ethernet]$ pread eth0 1
```

Register 1 value 0xffff

Displays the register 1 value of eth0 interface.

### 1.13.5 pwrite

`pwrite <interface> <port(decimal)> <value(hex)>`

Writes PHY register

## 1.14 rarpd

This command list is used to get the IP address of diskless system.

### 1.14.1 add

`add <0xH/Waddress > <IPAddress >`

Used to add Hardware address and IP address into the DataBase.

**<0xH/Waddress >** Hardware address in hexadecimal format.

**<IPAddress >** IP address in dot notation.

Examples:

```
[root @ rarpd]$ add 0x112233445566 192.168.3.4
```

Adds the H/W address and IP Address mapping in the database.

### 1.14.2 delete

`delete <0xH/Waddress >`

Deletes an entry in the existing RARP DataBase.

**<0xH/Waddress >** Hardware address in hexadecimal format.

Examples:

```
[root @ rarpd]$ delete 0x112233445566
```

Deletes mapping of H/W address 11:22:33:44:55:66 to IP Address, from the database.

### 1.14.3 list

list

Lists the RARP DataBase entries.

Examples:

```
[root @ rarpd]$ list
```

H/W ADDR IP ADDRESS

```
11:22:33:44:55:66 192.168.3.4
```

### 1.14.4 rarpd

rarpd <-a | interface>

Starts the RARPD on the specified interface or all the interfaces.

Examples:

```
[root @ rarpd]$ rarpd eth0
```

Starts the RARPD on eth0 interface.

```
[root @ rarpd]$ rarpd eth0
```

**If RARPD is already running the above command, it displays : “Rarpd is already running on the interface”**

```
[root @ rarpd]$ rarpd -a
```

Starts the RARPD on all the interfaces.

## 1.15 *logger*

This command list is used to display logging messages.

### 1.15.1 **log**

`log -o [module name/ log level]`

This command is used to display the log messages based on module name, severity level, or log messages based on severity level and module name.

**< loglevel >** Loglevel can be given as exception, error or info.

**< module name >** Module name can be ll, ip, tcp, udp, sockets ,rawip, icmp, arp, igmp, app, cdcli, if, telnet, dns, snmp, http, ping, ftp, ftpd, tftp, bootp, dhcpc, dhcps, qosbw, ipsec, ike, nat, firewall, diffserv, logger, queuing, ipoa, pppoa, ethoa, httpproxy, ftpproxy

Examples:

```
[root @ logger]$ log -o all
```

“Exception” level log messages and the error or info level log messages ( if enabled) will be logged from all modules.

```
[root @ logger]$ log -o tcp error
```

“error” level log messages from tcp module will be logged.

### 1.15.2 **logSeverity**

`logSeverity -o [error/info] [on/off ]`

This command is used to set the specified loglevel as ON or OFF. By default, error and info log level messages are off. There is no on/off option for exception log level messages. The exception log messages are always displayed (on).

Examples:

```
[root @ logger]$ logSeverity -o error on
```

Sets the loglevel error on so that error level log messages are displayed.

```
[root @ logger]$ log -o info off
```

Sets the loglevel info off, so that info level log messages are not displayed.

### 1.15.3 logFtpServer

logFtpServer [server\_address] [username] [password]

This command is used to configure the server address, user name, and password of the external ftp server. The log messages are directed to the ftp server given and are logged into a file by name “fwlogfile”.

Examples:

```
[root @ logger]$ logFtpServer 192.168.1.1 xyz xyz123
```

A file “fwlogfile” having the log message will be created in the ftp server 192.168.1.1

## 1.16 auth

These commands are located in the “auth” directory.

### 1.16.1 adduser

adduser <username> -o -services <cli | ftp | http> -permissions <admin | ordinary>

Adds a new user to the system. This command asks to set password for the user. This is an administrators command, ordinary users cannot use this.

**<username>** The name of the user to be added.

**-services <cli | ftp | http>** Specifies the user privileges. The allowable privileges are: **cli**, **ftp**, or **http**.

**-permissions <admin | ordinary>** Specifies the permissions granted to the user. By default, the user is granted “ordinary” permissions.

### 1.16.2 deluser

**deluser <username>**

Deletes the specified user. This is an administrators command, ordinary users cannot use this.

### 1.16.3 modifyuser

**modifyuser <username> -o -addservices <cli | ftp | http> -delservices <cli | ftp | http> -permissions <admin | ordinary>**

Modifies the properties of a user account.

**<username>** The name of the user whose services or permissions are to be modified.

**-addservices <cli | ftp | http>** Adds **cli**, **ftp**, or **http** services to the user.

**-delservices <cli | ftp | http>** Removes **cli**, **ftp**, or **http** services from the user.

#### **Examples:**

**modifyuser xyz -o -addservices ftp -permissions ordinary**

Allows user “xyz” to access the system via ftp. In addition, gives the user “xyz” ordinary permissions. In other words user “xyz” is not an administrator.

**modifyuser abc -o -delservices http**

Prohibits user “abc” from accessing the system via http.

**modifyuser xyz -o -addservices ftp -delservices http -permissions ordinary**

Allows user “xyz” to access the system via ftp and prohibits that user from accessing the system via http. In addition, gives the user “xyz” ordinary permissions. In other words, user “xyz” is not an administrator.

### 1.16.4 changepasswd

**changepasswd <username>**

Changes password of the existing user. This is an administrators command, ordinary users cannot use this.

### 1.16.5 listusers



**listusers**

Lists all current registered users and their allowed services and their permissions.

**1.16.6 resetuser**

resetuser <username>

To reset the password. This is an administrators command, ordinary users cannot use this.

**1.17 *FTP/HTTP Proxy***

These commands are available from the root menu..

**1.17.1 accountstats**

accountstats < httpproxy/ftp proxy>

This command is used to display accounting details of specified module.

**1.17.2 ftp proxy**

ftpProxy -o -auth {enable/disable}

This command is used to enable authentication for ftp proxy.

**1.17.3 http proxy**

httpProxy -o [-auth {enable/disable}]

http proxy -o -display

http proxy -o -stat

This command is used to enable authentication for http proxy. Use this command to display and view statistics for the http proxy.

## ***1.18 ACL(s)***

This command are available for the root menu.

### **1.18.1 addacl**

This command is used to create an access control list.

```
addacl module priority permissions -o -uid [UserId]
        -range [Source Range]
        -dest [Destination Address]
        -domain [Domain Name]
        -mime [Mime Type]
        -method [Method]
        -url [URL]
        -timeofday [DAY1 TIME1 DAY2 TIME2]
```

module : httpproxy/ftp proxy

permissions : allow/deny

Source Range : [192.168.2.1-192.168.2.6]

Mime Type : application,image,audio,video

Method : get/put

DAY1,DAY2 : sun/mon/tue/wed/thu/fri/sat

TIME1,TIME2 : Hrs:Mins

### **1.18.2 delacl**

This command is used to delete a access control list.

```
deacl module ruleid
```

module : httpproxy/ftp proxy

### **1.18.3 listacl**

This command is used to list access control list by a module.

**listacds module**  
**module** : httpproxy/ftpproxy

### ***1.19 snmp***

Snmp commands allow listing and setting of current SNMP configuration.

#### **1.19.1 list**

**list**

This command lists the current SNMP configuration like system version, system contact, system location, system id, etc.

Example:

List

Current SNMP Configuration

```

System Version Description : U.S.Robotics Corp,SureConnect ADSL Ethernet/USB Router
System Contact      : Phone: 1-800-874-2000
System Location     : Schuamburg,Il,USA
System ID           : 1 3 6 1 4 1 4242 255
Default Trap Address : 192.168.1.1
  
```

Communities :

```

for reading MIB      : public
for modifying MIB[1]: pub
for modifying MIB[2]: chip
  
```

#### **1.19.2 set**

**set [-d] [-c] [-l] [-i] [-t] [-s1] [-s2] value**

This command allows modification of any current SNMP configuration.

**-d value** System Version Description

- c value** System Contact.
- l value** System Location
- i value** Assigned Enterprise Number.
- t value** Trap Server IP Address.
- r value** Community for reading MIB.
- s1 value** Community for modifying MIB.
- s2 value** Community for modifying MIB.

### 1.19.3 shutdown

shutdown

This command shuts down the SNMP agent.

### 1.19.4 help

Option:

snmp list / set [-d] [-c] [-l] [-i] [-t] [-s1] [-s2] value

- d : System Version Description
- c : System Contact
- l : System Location
- i : Assigned Enterprise Number
- t : Trap Server IP Address
- r : Community for reading MIB
- s[1][2]: Community for modifying MIB

shutdown : To shutdown the agent

## 1.20 *adsl*

The 'adsl' directory contains commands to configure and gets the status information of the ADSL link.

### 1.20.1 setmode

setmode <mode>

Sets the mode of the ADSL link to ANSI (T1.413), G.DMT, G.Lite, or multi-mode. After executing this command, the configuration can be saved and the next time the machine is rebooted, the mode will take effect.

**<mode>** The mode may be **ansi**, **gdmtd**, **glite**, or **multi**.

### 1.20.2 readcmv

readcmv <cmv\_index> <offset>

The ADSL Configuration and Management Variables (CMV) can be read with the readcmv command. The CMV variables are documented in "CMV Reference Manual". This command will only provide meaningful results when the link is operational.

**<cmv\_index>** The **cmv index** may be one of the following values.

Note that they must be specified in uppercase: **ADPT, CNTL, CODE, DIAG, DOPT, FLAG, INFO, INTL, MASK, OPTN, PFCL, PFRX, PFTX, PSDM, RATE, RXDA, STAT, TEST, TONE, TXDA, UOPT.**

**<offset>**

This is a numeric value between 0 and 65535.

### 1.20.3 writecmv

writecmv <cmv\_index> <offset> <value>

The ADSL Configuration and Management Variables (CMV) can be written with the writecmv command. The CMV variables are documented in "CMV Reference Manual". This command will take effect only after the link is reconnected.

**<cmv\_index>** The **cmv index** may be one of the following values.

Note they must be specified in uppercase: **ADPT, CNTL, CODE, DIAG, DOPT, FLAG, INFO, INTL, MASK, OPTN, PFCL, PFRX, PFTX, PSDM, RATE, RXDA, STAT, TEST, TONE, TXDA, UOPT.**

**<offset>**

This is a numeric value between 0 and 258.

**<value>**

The value for the variable specified in hexadecimal format.

**1.20.4 mon**

mon

Displays the state of the ADSL connection. Only gives meaningful information when the link is operational.

**1.20.5 addusercmv**

addusercmv <cmv\_name> <offset> <value> <command> <msgid>

Allows the adding or setting of a CMV. The CMV values will be used the next time the system is rebooted. Note that the configuration must be saved after using this command in order for them to take effect on the next reboot.

**<cmv\_name>** The following values are permitted for the cmv name: **MASK, OPTN, PSDM, RXDA, TEST, TXDA, or ADPT.**

**<offset>**

The offset value which is a decimal in the range of 0 to 65535.

**<value>**

Value of the CMV. Value is expected in hexadecimal format.

**<command>**

Type of operation ( Read or Write ).

**<msgid>**

Message Id in decimal digits.

**1.20.6 delusercmv**

delusercmv <index>

Deletes the specified user CMV. The user cmv was added with the “addusercmv” command.

## **<index>**

Index of CMV as displayed by “listusercmv”.

### **1.20.7 listusercmv**

listusercmv

Lists the User CMVs added by the ‘addusercmv’ command.

### **1.20.8 eread**

eread <offset> <size>

Displays the Eagle 16 bit data memory

**<offset >.**

0 - 3ffff (hexadecimal)

**< size >**

1 - 256 (decimal)

### **1.20.9 ewrite**

ewrite <offset> <value>

Writes 1 16-bit word into Eagle 16 bit data memory.

**<offset >**

0 - 3ffff (hexadecimal)

**< value >**

0 - ffff (hexadecimal)

### **1.20.10 mwrite**

mwrite <offset> <value>

Writes 1 32-bit word into Eagle 16 bit data memory.

**<offset >**



0xa0000000 - 0xbfffffff (hexadecimal)

**< value >**

0 - ffffffff (hexadecimal)

### 1.20.11 mread

mread <offset> < size >

Displays the Falcon 32 bit data memory.

**<offset >**

0xa0000000 - 0xbfffffff (hexadecimal)

**< size >**

1 - 100 (decimal)

### 1.21 dhcpr

dhcpr start -o <remote\_server>

dhcpr stop

dhcpr status

Configures the DHCP Relay function. The system acts as a proxy for DHCP requests. When enabling the DHCP Relay, the address of the DHCP server is specified and DHCP requests are relayed to the specified server. On enabling DHCP relay functionality, the DHCP server functionality gets disabled (if it is enabled) and vice versa.

**start -o <remote\_server>** Starts DHCP relay. The **remote\_server** is the IP address of the DHCP server.

**Stop** Disables or stops the DHCP relay service.

**Status** Shows the status of the DHCP Relay.

### 1.22 igmp

igmp -o -proxyif <interface>

**igmp -o -routerif <interface>**

**igmp -o -deleteif <interface>**

**igmp -o -display**

Used for configuring igmp proxy and router interfaces.

**-proxyif <interface>** Sets the proxy interface. Typically a LAN interface (eth0) is specified.

**-routerif <interface>** Sets the router interface. Typically a WAN interface (ATM0, PPP0) is specified.

**-deleteif <interface>** Deletes either the proxy or router interface.

**-display** Displays the group in all interfaces.

## 1.23 qosc

The following commands are available in the “qosc” directory

### 1.23.1 addrule

**addrule priority -o [-da address] [-sa address] [-p protocol] [-dp portNum] [-sp portNum] [-tos serviceType] [-type icmp-types] [-flg tcp-flags] [-tc actionID] [-fw actionID]**

The **addrule** command provides a mechanism to specify an action (Firewall or Traffic Conditioning) to packets matching a user specified criteria. One or more of the following packet header fields can be used in the specification criteria: destination IP address, source IP address, destination port, source port, and protocol (TCP, UDP, or ICMP). Every rule must be associated with at least one action. Before adding a rule, the specified action must already be available in the system.

#### **<priority>**

The priority for this rule. Since there can be many rules configured and it is possible for a packet to match several different rules, the priority is used to break ties. The priority values range from the highest priority 0 to the lowest priority 65531. By default the minimum priority value (65535) is assigned if the priority is not specified.

**-da <ip\_address>**

Specifies that one of the criteria for a match is the destination address of the IP packet header. The **ip\_address** must be specified in dot-notation. The **prefix\_length** is used to specify the size of the netmask. The value for **prefix\_length** from 12 to 32.

**-sa <ip\_address>[/<prefix\_length>]**

Specifies that one of the criteria for a match is the source address of the IP packet header. The **ip\_address** must be specified in dot-notation. The **prefix\_length** is used to specify the size of the netmask. The value for **prefix\_length** from 12 to 32.

**-dp [operator]<port>**

Specifies that one of the criteria for a match is the destination port of the IP packet header. The **port** is a numeric value from 0 to 65,531. Optionally an **operator** may be specified so that many ports can be matched. The operators supported are: **<**, **>**, **=**.

**-sp [operator]<port>**

Specifies that one of the criteria for a match is the source port of the IP packet header. The **port** is a numeric value from 0 to 65,531. Optionally, an **operator** may be specified so that many ports can be matched. The operators supported are: **<**, **>**, **=**.

**-tos [operator] <class>**

The Type Of Service flag causes the type of service field in the packet header to be marked with the specified value. Based upon this marking, the packet will be given the applicable priority if the transmitting interface has a Queuing mechanism enabled. The class may be any one of the following:

**Priority Alternative****Priority****Comment**

rt Ef real time traffic

ct af1 critical traffic

hi af2 high priority traffic

md af3 medium priority traffic

lo af4 low priority traffic  
df default

Optionally an **operator** may be specified so that many ports can be matched. The operators supported are: <, >, =.

### **-flgs <tcp\_flags>**

This field represents the TCP flags SYN, URG, RST, FIN, ACK

### **-typ <icmp\_types>**

ICMP packet types such as ECHO REQ, ECHO REPLY, DEST UNREACH etc

**Note:** To assign an Action ID to a rule, you must create or use an existing Action ID before using **AddRule** command.

### **-tc <action\_id> <not support in the USR9003>**

Packets matching the criteria specified in this rule will be processed with the specified Traffic Conditioning action. The Traffic Conditioning action is identified by the **action\_id**. The **action\_id** was returned by an **addtc <not support in the USR9003>** command.

### **-fw <action\_id>**

Packets matching the criteria specified in this rule will be processed with the specified Firewall action. The Firewall action is identified by the **action\_id**. The **action\_id** was returned by **addfw** command.

### **Examples:**

```
addrule 5 -o -sa 192.168.2.1/24 -da 192.168.3.4 -p tcp -dp <2334 -sp 4546 -tos ef -fw 3
```

Packets with a source IP address of 192.168.2.1, a destination address of 192.168.3.4, and using a TCP destination port less than 2334 will have its TOS field marked with high priority and will be processed by Firewall action #3.

```
addrule 6 -o -sa 192.168.2.1 -da 192.168.3.4 -p icmp -dp >2334 -sp 4546 -tc 1 -fw 2
```

Packets with a source IP address of 192.168.2.1, a destination address of 192.168.3.4, a source port of 4546, and using an ICMP destination port greater than 2334 will have a source port processed by Traffic Conditioning action #1 and Firewall action #2.

### 1.23.2 deleterule

```
deleterule <rule_id> -[<action_type>]
```

Deletes a configured rule. The **rule\_id** is a Rule Identifier that is returned by **addrule**. Rule Identifiers are also listed in the **listrules** command. If **action\_type** is specified (as **tc** or **fw**), then only the action part is deleted and not the rule. If the action type is not specified or if the specified action type is the only action present in the rule, then the rule is also deleted.

#### <rule\_id>

The rule identifier returned by **addrule**. Rule identifiers are also listed by **listrules**.

#### -<action\_type>

The action\_type option can be **tc** for Traffic Conditioning or **fw** for Firewall action. This deletes the action part of the rule.

**Note:** If the rule has only one action specified with it, the entire rule is deleted as well.

#### Examples:

```
deleterule 1
```

Deletes the rule whose identifier is 1.

```
deleterule 2 -tc
```

Deletes rule number 2's traffic conditioning action. If rule 2 does not have any other actions, the rule is also deleted.

### 1.23.3 listrule

listrule <rule\_id>

Displays details about a configured rule whose identifier is **rule\_id**.

#### Example:

listrule 1

ID: 1 PRI: 30000 [SRC: 192.168.1.0/24] [FW: 1]

### 1.23.4 listrules

listrules

Displays details of all configured Rules.

#### Example:

Listrules

ID: 1 PRI: 30000 [SRC: 192.168.1.0/24] [FW: 1]

ID: 2 PRI: 29000 [DP: =67] [FW: 2]

### 1.23.5 listroutes

**listroutes**  
Displays the router's routing table.

Example:  
listroutes

Internet Routing Table		
Destination	Gateway	Netmask
-----		
127.0.0.1	127.0.0.1	
192.168.1.0	0: 0: 0: 0: 0: 0	255.255.255.0
224.0.0.0	0: 0: 0: 0: 0: 0	255.0.0.0

**1.23.6 listarps**

listarps

Displays the router's arp table.

Example

listarps

ARP Table	
destination addr	Link Address
-----	
192.168.1.3	0: 4:76:3f:6e:9c
224.0.0.1	1: 0:5e: 0: 0: 1

**1.23.7 nat**

Network Address Translation (NAT) hides internal IP addresses of a network from the outside world and provides access to the Internet for multiple machines using a single or fixed number of public IP addresses. The NAT framework supports both dynamic and static NAT. The **nat** command enables dynamic NAT processing

With the **nat** command, all private addresses are mapped to the IP address of the specified WAN **interface**.

```
nat -o [-interface <interface>] [-alias_address <addr>] [-unregistered_only yes|no] [-same_ports yes|no] [-disable] [-status]
```

#### **- interface <interface>**

Configures the specified WAN interface to use dynamic Network Address Translation. For all packets transmitted from the WAN interface, the source address is modified to use IP address of the WAN interface. The source port of the packet may be modified, as required. Packets received on the WAN interface will have their destination address modified appropriately to reach the appropriate machine on the LAN network.

#### **-alias\_address <ip\_address>**

The source address field of the outbound packets from the WAN interface will be overwritten with the specified **ip\_address**.

#### **-unregistered\_only [yes | no]**

If yes, only the outbound packets with unregistered source IP addresses are translated. All the outbound packets with the registered source IP addresses are forwarded on the WAN interface without translation. This is useful if you have one more subnet having registered IP addresses that share the common WAN link with the subnet having unregistered IP addresses.

Registered addresses are addresses reachable and advertised in the Internet, whereas unregistered addresses are private addresses which are not reachable through the Internet. Currently there is no command to display registered addresses.



**-same\_ports [yes | no]**

If yes, nat will try to retain the source port without modification for outgoing packets. This can only be done if the port is not already in use by another connection.

The default is yes.

**-disable**

The Option is used to disable the nat interface.

**-status**

This will display all the configured options on nat interface.

**Examples:**

```
nat -o -interface atm0
```

Configures the WAN interface atm0 to use network address translation.

```
nat -o -alias_address 202.54.30.50
```

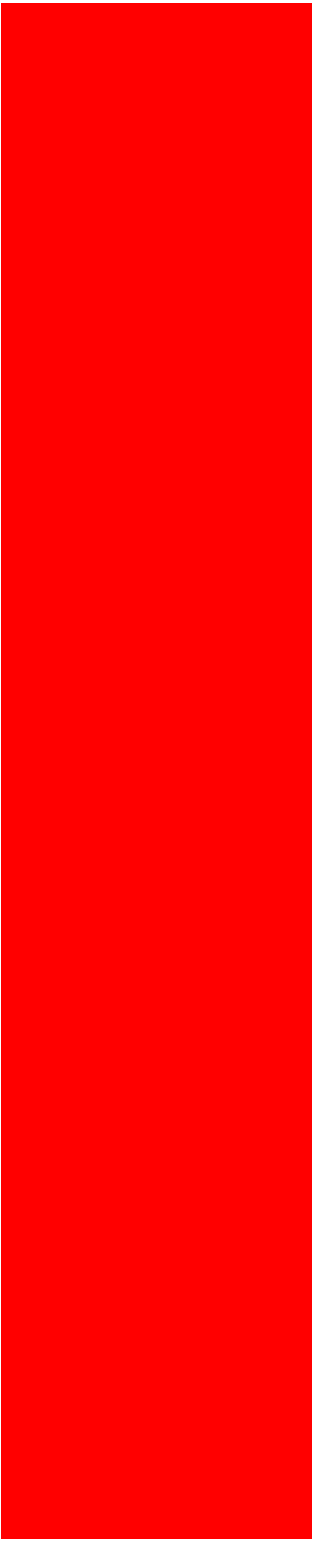
Configures alias address as 202.54.30.50 and maps this IP address to an interface and takes that as NAT interface.

```
nat .o -unregistered_only yes
```

Tells the NAT module to translate only those outgoing packets that bear an unregistered IP address in the source address field of the packet header.

```
nat .o -same_ports yes
```

Tells the NAT to try retaining the same source port while translating outbound packets. However, if this causes conflict with existing entries in the NAT table, then source port will be modified.



```
nat -o -disable
```

Disables the nat interface.

```
nat -o -status
```

Displays all the options on nat interface.

### **1.23.8 addressmap**

(This command is not supported for the USR9003 router. Use the Menu system or the Web Interface to create or delete Static NAT routes or Range Port maps)

### **1.23.9 portmap**

(This command is not supported for the USR9003 router. Use the Menu system or the Web Interface to create or delete Static NAT routes or Range Port maps)

### **1.23.10 delrdaddr**

(This command is not supported for the USR9003 router. Use the Menu system or the Web Interface to create or delete Static NAT routes or Range Port maps)

### **1.23.11 maplist**

```
maplist
```

Display the current mappings for NAT configurations.

Example:

```
maplist
```

Local address range	Alias address
---------------------	---------------

```
-----
192.168.1.1  192.168.1.10  210.134.100.0
-----
```

Port range mappings [WAN to LAN]...

Alias address	Port range	Local address	Port range	Protocol
210.168.0.1	60 - 78	192.168.1.10	70 - 88	TCP

### 1.23.12 **addpublic**

**addpublic** <public\_addr >

#### **<public\_addr>**

The public IP address to be entered. Dot notation should be used.

#### **Examples:**

**addpublic** 217.11.52.34

Enters the public IP address 217.11.52.34.

### 1.23.13 **delpublic**

**delPublic** <index>

Removes the entered IP addresses specified by **addpublic**. The **index** specifies a particular IP address. The indexes are specified with the **listpubaddrs** command.

1.23.14 listpubaddrs

listpubaddr

Lists the public IP addresses that were entered with **addpublic**.

1.23.15 links

links

Display all logic links in NAT table.

Example:

links

LOCAL-ADDR/PORT ALIAS-ADDR/PORT REMOT-ADDR/PORT LINK/EX.TIME IN/OUT-PKTS						
~~~~~						
192.168.1.3		0.0.0.0		192.168.1.1	TCP	657
2217	0		23	172800	1105	

1.23.16 addfw

addfw action -o [-ifa interface] [-dir direction] [-code icmp code]

action : allow, deny, reject, reset, unreachable,

interface : any valid interface of the system

direction : in or out, default all direction

icmp code : any for the following code mentioned

unreach net(default)	- 0
unreach host	- 1
unreach port	- 3
unreach srcfail	- 5
unreach net-unknown	- 6
unreach host-unknown	- 7
unreach isolated	- 8
unreach net-prohibited	- 9
unreach host-prohibited	- 10
unreach filter-prohibited	- 13

Adds a firewall action. An action identifier is returned which can be used with the **addrule** command. The **addrule** command is used to specify the types of packets that will be given this action.

#### <action>

Specifies what happens when the packet enters. The following actions are possible:

#### Action Comment

Allow - Permits the packet to enter or leave the system.

Deny - Drops the packet.

Reset - Forces the TCP connection to be reset.

Reject - Drops the packet and issues an **.unreach host. ICMP** error.

Unreach - Drops the packet and sends the ICMP error specified with the **-error\_code** option.

Divert - Changes the destination port of the packet. See the **-port** option.

#### -ifa <interface>

The name of the interface that this firewall action applies to. Typically this is the WAN interface (atm0, ppp0).

#### -dir <direction>

Specifies whether the action applies to incoming, outgoing, or both incoming and outgoing traffic. The allowable values for **direction** are **in** or **out**. If not specified, the action applies to both incoming and outgoing traffic.

**-code <icmp\_code>**

This ICMP error code is issued when the **unreach** action is used.

**Code Meaning**

0 unreach net (default)  
1 unreach host  
3 unreach port  
5 unreach srcfail  
6 unreach net-unknown  
7 unreach host-unknown  
8 unreach isolated  
9 unreach net-prohibited  
10 unreach host-prohibited  
13 unreach filter-prohibited

**Examples:**

```
addfw reset -o -ifa atm0  
addrule 6 -da 216.11.52.34 -dp 23 -p tcp -fw 1
```

The rules above, results in all attempts via telnet from any host to 216.11.52.34 being reset. First, the **addfw** command defines the firewall action of reset for the traffic coming from the atm0 interface. The **addfw** command returns an identifier, suppose for this example that 1 is returned. Next, the **addrule** command defines telnet from any host to 216.11.52.34 and using the **-fw** option it links the **reset** action as specified with the **addfw** command.

```
addfw unreach -o -code 1  
addrule 6 -da 192.168.7.25 -p icmp -fw 3
```

The two rules above specify that all ICMP packets destined to 192.168.7.25 will result in the

message "ICMP Host Unreachable" being sent back to the sender. First, the **addfw** command defines a Host Unreachable action. Next, the **addrule** command defines ICMP flow to 192.168.7.25, and using the **-fw** option, it links the **unreach** action to this flow.

### 1.23.17 listallfw

listallfw

Displays all firewall actions.

#### Example:

listallfw

Id	Interface	Direction	Day-Time	To Day-Time	Action
1	eth0	in	sun 0:00	sat 23:59	allow
2	any	any	sun 0:00	sat 23:59	allow
3	atm0	any	sun 0:00	sat 23:59	reset
4	any	any	sun 0:00	sat 23:59	unreach host

### 1.23.18 listfw

listfw <id>

Displays all configured parameters of the specified action identifier.

#### Example:

listfw 4

## FIREWALL ACTIONS

-----

Id	Interface	Direction	Day-Time	To Day-Time	Action
4	any	any	sun 0:00	sat 23:59	unreach host

### 1.23.19 delfw

delfw <id>

Deletes the specified firewall action. The **id** is returned from the **addfw** command and is also listed in the **listallfw** command.

## 1.24 ATM

### 1.24.1 vcadd

vcadd <vpi> <vci> <service> <encaps> -o [-peak <val>] [-avg <val>] [-mbs <val>] [-cdvt <val>]

Establishes a Permanent Virtual Circuit (PVC) with the specified traffic descriptors. The **service** specifies the traffic type of the PVC. Permissible values are: **cbr**, **rtvbr**, **nrtvbr**, or **ubr**. The adaptation parameter is used to specify the type of ATM adaptation layer for which permissible values are **aal5** for data connections and **aal2** for voice connections.

**<vpi> <vci>** Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) that identifies this ATM connection. The **vpi** is an integer number which can range from 0 to 255. The **vci** is an integer number which can range from 0 to 65,535.

**<service>** The service specifies the kind of traffic shaping. The possible values are **cbr**, **rtvbr**, **nrtvbr**, or **ubr**.



The following table briefly describes these options.

Service	Name	Description
cbr	Constant Bit Rate	Supports real-time applications requiring a fixed amount of bandwidth. The applications produce data at regular rates.
rtvbr	Real Time Variable Bit Rate	Supports time-sensitive applications such as voice. In these applications the rate at which cells arrive are varied. But these cells need to be delivered in a timely manner with minimal delay.
nrtvbr	Non Real Time Variable Bit Rate	Supports applications that have no constraints on delay and delay variation, but still have variable-rate and bursty traffic characteristics. Applications include packet data transfers, terminal sessions, and file transfers.
ubr	Unspecified Bit Rate	Best effort service that does not require tightly constrained delay and delay variation. UBR provides no specific quality of service or guaranteed throughput. The traffic is “at risk” because the network provides no performance guarantees for UBR traffic. The traffic descriptor is similar to IP’s “best effort” approach to traffic management.

**<encaps>** Specifies whether ATM Adaptation Layer is **aal2** or **aal5**. For voice (not support by USR9003) connections, AAL2 must be specified. For data connections, AAL5 must be specified.

**-peak <value>** Defines the fastest rate a user can send cells to the network. It is expressed in

units of cells per second.

**-avg <value>** Defines the maximum sustainable/average rate a user can send cells to the network. It is expressed in cells per second. This specifies the bandwidth utilization. This value must always be less than or equal to the Peak Cell Rate (see **-pcr** option).

**-mbs <value>** Maximum number of cells the user can send at the peak rate in a burst, within the sustainable rate.

**-cdvt <value>** Constrains the number of cells the user can send to the network at the maximum line rate. It is expressed in microseconds.

#### **Examples:**

```
vcadd 0 38 cbr aal2 -o -peak 1600 -mbs 25 -cdvt 50000
```

The following creates a PVC (vpi - 0,vci - 38). Service class is cbr (Constant Bit Rate) and encapsulation as aal2 (for voice). The traffic descriptors are set for peak cell rate of 1600kbps, burst size of 25 cells, and cell delay variation of 50000 microseconds.

```
vcadd 0 39 ubr aal5
```

The following creates a PVC (vpi=0, vci=39). Service class is ubr (Unspecified Bit Rate) and encapsulation is aal5 (for data).

### **1.24.2 deletevc**

```
deletevc <vpi> <vci>
```

Deletes the specified PVC. The PVC is identified by the **vpi / vci** values.

Example:

```
deletevc 0 39
```

Deletes a PVC with vpi=0 and vci=39.

### **1.24.3 showatmconn**

```
showatmconn
```

Lists the existing PVCs.

Example:

```
showatmconn
```

ATM INTERFACE CONFIGURATION INFORMATION  
 MAX INTERFACE VPC's : 10  
 MAX INTERFACE VCI's : 255  
 ILMI VPI VALUE AT THIS INTERFACE : 0  
 ILMI VCI VALUE AT THIS INTERFACE : 16  
 INTERFACE ADMINISTRATIVE ADDRESS : 137.71.139.250  
 ACTIVE VCC CONNECTIONS AT THIS INTERFACE : 2

#### 1.24.4 atmstats

atmstats

Lists the AAL5 and ATM statistics.

#### 1.24.5 f5lb

f5lb <vpi> <vci> <flow\_type> -o <LLID>

This command initiates an F5 loopback.

**<vpi>** Virtual Path Identifier for the ATM connection.

**<vci>** Virtual Circuit Identifier for the ATM connection.

**<flow\_type>** Specifies segment (**seg**) or end-to-end (**ete**).

**<LLID>** The loopback identifier. This is specified as 32 hex digits. The default is:  
 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

#### 1.24.6 vpadd

vpadd <id> <vpi> <service> -o [-peak <val>][-avg <val>] [-mbs <val>] [-cdvt <val>]

This command allows the adding and configuring of an atm connection.

**<id>** Connection identification

**< vpi >** vpi number  
**< service >** cbr / rtvbr / nrtvbr / ubr  
**<peak val>**  
 Peak cell rate (in cells/s)  
**<avg val >**  
 Average/minimum (SCR) cell rate (in cells/s)  
**<mbs val >**  
 Burst size in cells  
**<cdvt val >**  
 Cell delay variation tolerance (in micro secs)

## *1.25 sndcp*

The following commands are available under the “sndcp” directory.

### **1.25.1 routedbridge**

routedbridge <interface> disable <vpi><vci>  
 routedbridge <interface> enable <vpi><vci> -o <-enc encapsulation> <-vpn OUI  
 vpnId>

Configures the specified WAN interface to use Routed Bridge which is RFC 2684 routing.

**Note:** The Maximum Transfer Unit (MTU) for the Routed Bridge is 9182.

**Interface** The name of the WAN interface. Typically this is ‘atm0’.

**Enable** Enables this Routed Bridge interface.

**Disable** Disables this Routed Bridge interface.

**<vpi> <vci >** These are the vpi, vci values on which the Routed Bridge has to be enabled/disabled.  
 vpi,vci are assigned with the **vcadd** command. The **showatmconn** command can also be used to  
 list the current ATM connections with their respective vpi and vci values. (Note the **vcadd** and  
**showatmconn** commands are located in the “atm” directory).

**-enc LLC | VC** Specifies the encapsulation type. The possible values are 'llc' or 'vc', which represent Logical Link Control or VC multiplexing respectively.

**-vpn OUI vpnId** Enables VPN encapsulation. OUI is organizationally unique identifier. VpnId is VPN index.

Example:

```
routedbridge atm0 enable 0 100 -o -enc LLC
```

Establishes a Routed Bridge connection on the WAN interface atm0. VPI, VCI values 0, 100 is used for the ATM connection. LLC encapsulation will be used.

```
routedbridge atm0 disable 0 100
```

Disables the Routed Bridge connection.

### 1.25.2 Ipoa

```
ipoa <interface> disable <vpi><vci> -o [default] [-nhp <ip_address>]
```

```
ipoa <interface> enable <vpi><vci> -o [-enc LLC|VC] [default] [-nhp <ip_address>]  
[-vpn <OUI> <vpnId>]
```

Configures the specified WAN interface to use IPoA, which is Classical IP over ATM including Inverse ATM Arp. IPoA uses Inverse ATM Arp to get the peer IP address. The Maximum Transfer Unit (MTU) for IPoA is 9182.

**Note:** In this case, if the peer does not support Inverse ATM Arp, then there will not be any traffic flow. If the nexthop (**-nhp** option) or **default** PVC is configured per IPoA, then it does not use Inverse ATM Arp to get the peer IP address.

**Interface** The name of the WAN interface. Typically this is 'atm0'.

**Enable** Enables this IPoA interface.

**Disable** Disables this IPoA interface.

**<vpi> <vci>** These are the vpi, vci values on which ipoa has to be enabled/disabled. vpi,vci are assigned with the **vcadd** command. The **showatmconn** command can also be used to list the current ATM connections with their respective vpi and vci values. (Note the **vcadd** and **showatmconn** commands are located in the "atm" directory).

**-enc LLC | VC** Specifies the encapsulation type. The possible values are 'llc' or 'vc' which

represent Logical Link Control or VC multiplexing respectively.

**Default** If an entry does not exist for the destination in the inverse ATM Arp table, then the packet is forwarded on the PVC specified.

**-nhp <ip\_address>** Specifies the next hop IP address of the peer-end.

**-vpn <OUI> <vpnId>** Specifies the VPN encapsulation. The **OUI** (Organizationally Unique Identifier) and VPN identifier are specified as numbers.

Example:

```
ipoa atm0 enable 0 100 -o -enc LLC
```

Establishes an IPoA connection on the WAN interface atm0. VPI, VCI values 0, 100 is used for the ATM connection. LLC encapsulation will be used.

```
ipoa atm0 disable 0 100
```

Disables the IPoA connection.

### 1.25.3 list

list <param>

Displays the configurations of IPOA/BRIDGE/ROUTEDBRIDGE.

**<param>**

param can be bridge / routedbridge / ipoa.

**Example:**

```
list bridge
```

Displays Bridge parameters.

```
list routedbridge
```

Displays Routed Bridge parameters.

```
list ipoa
```

Displays IPoA parameters.

### 1.25.4 pppoe

```
pppoe <profile> -o <-if Interface> <-encap Encapsulation> <-restarttime Timeout >
<-auth Auth> <-myaddr IPAddr> <-peer PeerIPAddr> <-mtu MTU> <-mru MRU>
<-hwaddr Ethaddr> <-service ServiceName> <-acname ACName> <-tag HostTag>
<-user Username> <-pass Password> <-vpi Vpi> <-vci Vci> <-mode Mode>
<-idletime idleTimeout> <-nat [enable/disable]> <-netmask mask> <-vpn OUI vpnId>
```

Sets up a PPPoE profile.

**Profile** Profile number to configure. Specify an integer number from 0 through 7.

**-if <interface>** Interface name with unit number. Four PPP interfaces are available: ppp0, ppp1, ppp2, ppp3, ppp4, ppp5, ppp6, ppp7

**-encap <encapsulation>** Encapsulation type. Possible values are LLC (Logical Link Control) or VC (VC Multiplexing).

**-restarttime <timeout>** Timeout in milliseconds. The default is 3 seconds (3000 milli seconds).

**-auth <authentication>** Authentication type (**pap**, **chap**, **mschapv1**, **mschapv2**).

**-myaddr <ip\_addr>** Desired self IP Address (eg 192.168.26.7). Expressed in dot notation.

**-peer <peer\_addr>** Peer IP Address to optionally specify the address of the Internet Service Provider. Expressed in dot notation.

**-mtu <mtu>** Maximum Transmission Unit expressed in bytes. The default is 1492.

**-mru <mru>** Maximum Receive Unit, negotiated in LCP. The default is 1492.

**-hwaddr <addr>** Hardware address of the router for this connection. Typically, one of the Ethernet hardware addresses of the router are used for this. The address is specified with ':' used as a delimiter between byte values (eg 10:11:12:13:14:15).

**-service <service\_name>** Service Name.

**-acname <ac\_name>** Access Concentrator name.

**-tag <host\_tag>** Use host unique tag.

**-user <user>** Username. This string can be up to 30 characters.

**-pass <password>** Password. This string can be up to 30 characters.

**-vpi <vpi>** The ATM vpi value which was assigned in a **vcadd** command or listed in a **atmshowconn** command.

**-vci <vci>** The ATM vci value which was assigned in a **vcadd** command or listed in a **atmshowconn** command.

**-mode <mode>** Mode can be AUTO or DIRECT. In case the mode is set to AUTO, the PPPoE

negotiation starts only when the system identifies any traffic required to be transferred on the link. In case the mode is set to DIRECT, the PPPoE negotiation is started manually using the “pppoestart” command. The default mode is DIRECT.

**-idletime <idletime>** The value of idletime is given in minutes and this value indicates how long the link remains up when there is no data transfer over the link. The idle time works only when used in combination with mode AUTO. The default is 60 seconds.

**-nat enable|disable** Enables or disables NAT (Network Address Translation) for this PPP interface. The default is for NAT to be disabled.

**-netmask <mask>** Specifies the netmask for the PPP interface. The mask is specified in dot notation (i.e. 255.255.255.0).

**-vpn <OUI> <vpnId>** Specifies the VPN encapsulation. The **OUI** (Organizationally Unique Identifier) and VPN identifier are specified as numbers.

#### **Example:**

```
pppoe 1 -o -if ppp0 -vpi 0 -vci 100 -user jones -pass Indiana
```

Defines a PPPoE profile. The ppp0 interface is used with the ATM connection vpi 0 and vci 100. The user name is “jones” and the password is “Indiana”.

### **1.25.5 pppoestart**

```
pppoestart <Profile>
```

Starts PPPoE given the specified profile. The profile is specified with an integer (0, 1, 2). The profile was previously specified with the **pppoe** command.

```
pppoestop <Profile>
```

### **1.25.6 pppoestop**

```
pppoestop <Profile>
```

Stops PPPoE given the specified profile. The profile is specified with an integer (0, 1, 2). The profile was previously specified with the **pppoe** command.

```
pppoestop <Profile>
```



### 1.25.7 pppoelist

pppoelist [-profile Profile]

Displays the listing of all available free profiles. If **-profile** is not specified, this command will display all the valid configured profiles.

### 1.25.8 pppoedefault

pppoedefault <profile>

Configures the specified profile as the default PPPoE connection. This profile must be using “auto” mode. Out of all the profiles that are using the “auto” option, only one can be run at a time. This command is used to specify that profile. If the “pppoedefault” command is not used, the first profile that used the “auto” option is used as the default.

### 1.25.9 pppoedel

pppoedel <profile> | all

Deletes the specified profile. Profile is specified as a number (see pppoe command). If *all* is specified, then all profiles are deleted. This command only deletes inactive profiles. If a profile is in use, it must be stopped before it can be deleted.

### 1.25.10 pppoa

pppoa <profile> -o <-if Interface> <-encap Encapsulation> <-restarttime Timeout>  
> <-auth Auth> <-myaddr IPAddr> <-peer PeerIPAddr> <-mtu MTU> <-mru MRU>  
<-user Username> <-pass Password> <-vpi Vpi> <-vci Vci> <-nat [enable/disable]> <-netmask mask> <-vpn OUI vpnId>

Sets up a PPPoA profile.

**Profile** Profile number to configure. Specify an integer number from 0 through 7.

**-if <interface>** Interface name with unit number. Eight PPP interfaces are available: ppp0, ppp1, ppp2, ppp3, ppp4, ppp5, ppp6, and ppp7.

**-encap <encapsulation>** Encapsulation type. Possible values are LLC or VC.

**-restarttime <timeout>** Timeout in milliseconds. The default is 3 seconds (3000 milli seconds).

**-auth <authentication>** Authentication type (PAP or CHAP).

**-myaddr <ip\_addr>** Desired self IP Address (eg 192.168.26.7). Expressed in dot notation.

**-peer <peer\_addr>** Peer IP Address to optionally specify the IP address of the Internet Service Provider. Expressed in dot notation.

**-mtu <mtu>** Maximum Transmission Unit expressed in bytes. The default is 1500.

**-mru <mru>** Maximum Receive Unit, negotiated in LCP. The default is 1500.

**-user <user>** Username.

**-pass <password>** Password.

**-vpi <vpi>** The ATM vpi value which was assigned in a **vcadd** command or listed in a **atmshowconn** command.

**-vci <vci>** The ATM vci value which was assigned in a **vcadd** command or listed in a **atmshowconn** command.

**-nat enable|disable**

Enables or disables NAT (Network Address Translation) for this PPP interface. The default is for NAT to be disabled.

**-netmask <mask>** Specifies the netmask for the PPP interface. The mask is specified in dot notation (i.e. 255.255.255.0).

**-vpn <OUI> <vpnId>** Specifies the VPN encapsulation. The **OUI** (Organizationally Unique Identifier) and VPN identifier are specified as numbers.

**Example:**

```
pppoa 1 -o -if ppp0 -vpi 0 -vci 100 -user jones -pass Indiana
```

Defines a PPPoA profile. The ppp0 interface is used with the ATM connection with vpi 0 and vci 100. The user name is "jones" and the password is "Indiana".

### 1.25.11 pppoastart

pppoastart <Profile>

Starts PPPoA given the specified profile. The profile is specified with an integer (0, 1, 2). The profile was previously specified with the **pppoa** command pppoastop <Profile>

### 1.25.12 pppoastop

pppoastop <Profile> Stops PPPoA given the specified profile. The profile is specified with an integer (0, 1, 2). The profile was previously specified with the **pppoa** command.

pppoastop <Profile>

### 1.25.13 pppoalist

pppoalist [-profile Profile]

Displays the listing of all available free profiles. If **-profile** is not specified, this command will display all the valid configured profiles.

### 1.25.14 pppoadel

pppoadel <profile> | all

Deletes the specified profile. Profile is specified as a number (see pppoa command). If all is specified, then all profiles are deleted. This command only deletes inactive profiles. If a profile is in use, it must be stopped before it can be deleted.

### 1.25.15 pppoadefault

pppoadefault <profile>

Configures the specified profile as the default PPPoA connection. This profile must be using “auto” mode. Out of all the profiles which are using the “auto” option, only one can be run at a time. This command is used to specify that profile.

### 1.25.16 liststat

liststat <param>

Displays the status of IPOA/BRIDGE/ROUTEDBRIDGE/PPPOE/PPPOA.

**<param>** param can be bridge / routedbridge / ipoa / pppoa / pppoe.

Example:

liststat bridge

Displays Bridge status

liststat routedbridge

Displays Routed Bridge status

liststat ipoa

Displays IPoA status

liststat pppoa

Displays PPPoA status

liststat pppoe

Displays PPPoE status

### 1.25.17 ppptrace

ppptrace [on | off ]

Enables or Disables PPP console messages. Requires an RS-232 cable connection and a running terminal emulation program to view messages (refer to the Menu User Interface for further instructions).

### 1.25.18 1483mer

1483mer add port vpi vci encapsulation

Configures the specified WAN interface to use 1483MER (MAC Encapsulation Routing). The “**mer**” command is used to enable the configuration.

**Port** The MER interface name (mer0).

**<vpi> <vci>** These are the vpi, vci values on which the 1483 is configured. vpi,vci are assigned with the **vcadd** command. The **showatmconn** command can also be used to list the current ATM connections with their respective vpi and vci values. (Note the **vcadd** and **showatmconn** commands are located in the “atm” directory). The vpi value is between 0 - 255. The vci value is between 0 - 65535.

**-encapsulation llc | vc** Specifies the encapsulation type. The possible values are ‘llc’ or ‘vc’ which represent Logical Link Control or VC multiplexing respectively.

### 1.25.19 mer

mer enable | disable | Delete | Status

Enables, disables, deletes or gives status of the 1483MER configurations.

### 1.25.20 relay

relay

relay -o -client <-if interface> <-pvc vpi vci>

relay -o -server <-if interface> <-pvc vpi vci>

relay -o enable | disable

relay -o -display

Configures and enables PPPoE relay.

**-client <-if interface> <-pvc vpi vci>**

Specifies the server interface for the PPPoE Relay. The PPPoE server is connected to this interface. The interface may be **ppp0**, **ppp1**, **ppp2**, **ppp3**, **ppp4**, **ppp5**, **ppp6**, or **ppp7**.

**-server <-if interface> <-pvc vpi vci>**

Specifies the client interface for the PPPoE Relay. The PPPoE clients are connected to this interface. Typically **eth0** is specified.

**enable**



Enables the PPPoE Relay feature.  
**disable**  
Disables the PPPoE Relay feature.  
**-display**  
Displays the PPPoE Relay configuration.

=====



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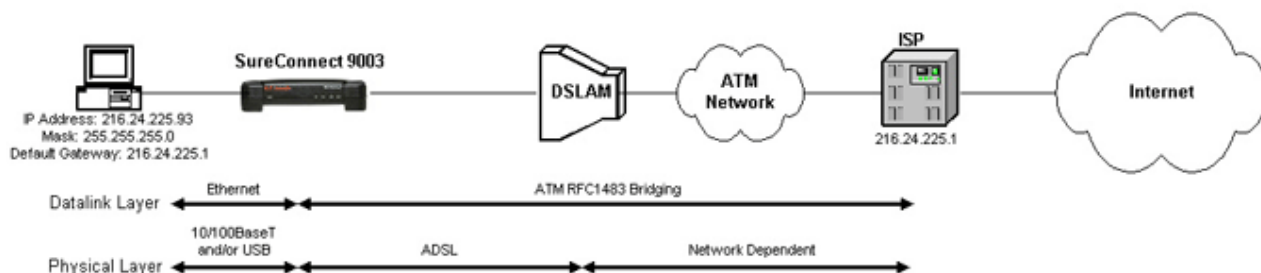
# U.S. Robotics SureConnect™ ADSL Ethernet/USB Router User Guide

Windows 95, 98, NT 4.0, Me, 2000, XP or later, Mac and Linux

## • CONFIGURATION EXAMPLE

### Setting Up RFC1483 Bridging

## RFC1483 Bridging



## Configuration Description

When you use RFC1483 bridging, Ethernet frames bridge over the ATM virtual circuit. This circuit connects the router to the Internet Service Provider (ISP). The router operates in Bridge Mode, and only passes Ethernet packets between the ISP and local network. The ISP may choose to statically or dynamically assign IP addresses to local network nodes. If the ISP employs dynamic assignment, a DHCP server in the ISP's network assigns addresses.

## Setup

1. Open the SureConnect Web User Interface (WUI). This example employs the Web User Interface. You can set up the Network Model with any of the router's three interfaces. The other two interfaces are the Terminal User Interface (TUI) and the Command-Line Interface (CLI). In any case, succeeding steps are similar.



2. Click the Service Provider Settings tab. This tab is on the top of the screen. The Service Provider Settings Window opens.
3. Click **ADSL Standard**. The ADSL Standard Window opens.



4. Select the ADSL protocol that you'll use. For most users, Multi Mode is the right choice.
5. Click **Apply**.
6. Click **WAN Setup**. The WAN Setup Window opens.



7. Below the Add button, notice the Current ATM PVC List. On this list, select any PVC that you don't need.
8. Click **Delete**.
9. Click **RFC1483 Bridged**.



10. Enter VPI and VCI values.
11. Select your desired encapsulation mode. Your choices are: LLC/SNAP and VC Multiplexing.
12. At Network Settings, be sure that Enable NAPT and Enable DHCP remain unselected.
13. Click **Add**.
14. Click the Tools tab at the top of the window.
15. Click **Save & Restart**.
16. Click **Save**.
17. Click **Restart**.

## Verify Setup

1. Open the SureConnect Web User Interface (*WUI*).



Figure 1

2. Click the Service Provider Settings tab. This tab is on the top of the screen. (See Figure 1.)

3. Click **ADSL Standard**. (See Figure 1.)

4. Verify that you've selected Multi Mode. (See Figure 2.)



Figure 2

5. Click **WAN Setup**.
6. See the Current ATM PVC List at the bottom of the screen (Figure 3). On this list, verify your VPI and VCI settings.

7. On the Current ATM PVC List, see "Encap." Verify your Encapsulation Mode settings. (See Figure 3.)

Current ATM PVC List										
Select	Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout
<input type="radio"/>	Bridged	0	35	LLC	OFF	None	None	NA	NA	NA
										PPP Mode
										Enable

Figure 3

8. See the Current ATM PVC List. Verify that only the RFC Bridged configuration appears there. (See Figure 3.)

9. Click **Bridging**.

List of Bridge Entries										
Interface Name	State	MAC Address	Priority	Link Cost	VPI	VCI	Encapsulation	VPN OUI	VPN ID	
eth1	FORWARDING	00:c0:49:c0:9c:46	128	100	NA	NA	NA	NA	NA	
eth2	FORWARDING	00:c0:49:c0:9c:47	128	100	NA	NA	NA	NA	NA	
usb0	FORWARDING	00:00:00:33:22:66	128	100	NA	NA	NA	NA	NA	
atm0	FORWARDING	NA	128	250	0	35	LLC	0	0	

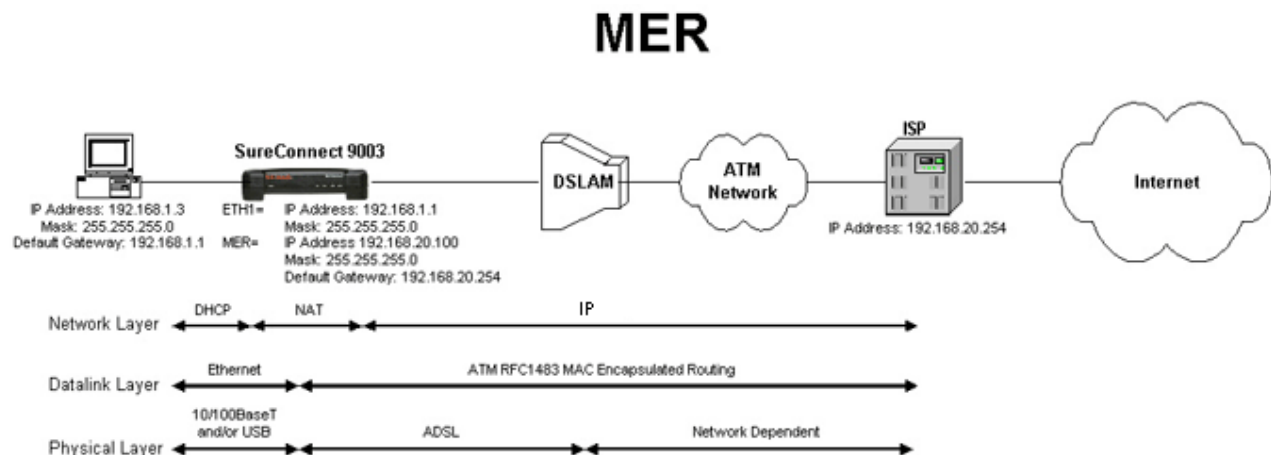
Interfaces   Add Bridge   Erase All   Disable

10. Verify your bridging entries. (See Figure 4.)

Figure 4

## • CONFIGURATION EXAMPLE

### Setting Up MER



### Configuration Description

When you use MAC Encapsulated Routing (*MER*), Ethernet frames bridge over the ATM Virtual Circuit. The router can still perform IP routing with Network Address Translation (*NAT*) for the LAN. To perform this NAT function, the router requires a static IP address for its MER interface. Your ISP must supply the address. The router also supports dynamic assignment of IP addresses to local network nodes. When using dynamic assignment, the router acts as a DHCP server.

## Setup

1. Open the SureConnect Web User Interface (*WUI*). This example employs the Web User Interface. You can set up the Network Model with any of the router's three interfaces. The other two interfaces are the Terminal User Interface (*TUI*) and the Command-Line Interface (*CLI*). In any case, succeeding steps are similar.
2. Click the Service Provider Settings tab. This tab is on the top of the screen. The Service Provider Settings Window opens.
3. Click **ADSL Standard**. The ADSL Standard Window opens.



4. Select the ADSL protocol that you'll use. For most users, Multi Mode is the right choice.
5. Click **Apply**.
6. Click **WAN Setup**. The WAN Setup Window opens.

**U.S. Robotics**  
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• WAN Setup • ADSL Standard • PPPoE Relay • NAT Bridge • Bridging • Advanced

**WAN Setup**

VPI:  VCI:

Encapsulation Mode:  
☒ LLC/SNAP ☐ Vc Multiplexing

Network Settings:  
☐ Enable NATP ☐ Enable DHCP

☒ RFC1483 Bridged

☐ RFC1483 Routed  
 WAN IP address:  WAN subnet mask:

☐ PPPoE  
 User name:   
 Password:   
 Dialing Mode:  Idle Timeout (min):  Authentication:

☐ PPPoA  
 User name:   
 Password:  Authentication:

☐ Mer  
 IP address:  subnet mask:

**Current ATM PVC List**

Select Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input type="radio"/> Mer	0	40	LLC	On	192.168.20.100	255.255.255.0	NA	NA	NA	NA	NA

7. Below the Add button, notice the Current ATM PVC List. On this list, select any PVC that you don't need.
8. Click **Delete**.
9. Click **MER**.
10. Enter VPI and VCI values.
11. Select your desired encapsulation mode. Your choices are: LLC/SNAP and VC Multiplexing.
12. At Network Settings, enable NATP and DHCP by selecting the appropriate boxes.
13. In the MER box, enter the static IP address and mask that your ISP supplied.

14. Click **Add**.

15. Click the Network tab.

16. Click **DNS Relay**. The DNS & Default Gateway Configuration Window opens. (See the screen shot below.)



17. At the DNS Relay line, select **Disable** from the dropdown menu..

18. Click **Apply**.

19. If your ISP provided a Domain Name, enter the name here. (Domain Name isn't a required field. The ISP might not provide a domain name.)

20. Enter the Primary DNS Server IP address that your ISP provided.

21. Enter the Secondary DNS Server IP address that your ISP provided. (Secondary DNS Server isn't a required field. The ISP might not provide an IP address for a secondary DNS server.)

22. Enter the Default Gateway IP address that your ISP provided.

23. On the DNS Relay line, select **Enable** from the dropdown menu.

24. Click **Apply**.

25. Click the Tools tab at the top of the window.

26. Click **Save & Restart**.

27. Click **Save**.

28. Click **Restart**.

## Verify Setup

1. Open the SureConnect Web User Interface (*WUI*).

2. Click the Service Provider Settings tab. This tab is on the top of the screen. (See Figure 1.)



Figure 1

3. Click **ADSL Standard**.  
(See Figure 1.)

4. Verify that you've selected Multi Mode. (See Figure 2.)



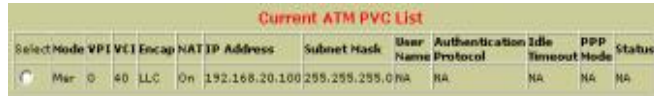
Figure 2

5. Click **WAN Setup**.

6. See the Current ATM PVC List at the bottom of the screen (Figure 3). On this list, verify your settings for VPI and VCI.

7. On the Current ATM PVC List, see "Encap." Verify your Encapsulation Mode settings. (See Figure 3.)

8. On the Current ATM PVC List, see "NAT." Verify that NAT is "On." (See Figure 3.)



Select	Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input type="radio"/>	Mer	0	40	LLC	On	192.168.20.100	255.255.255.0	NA	NA	NA	NA	NA

Figure 3

9. Verify the IP address for your ATM PVC. (See Figure 3.)

10. Verify the mask for your ATM PVC. (See Figure 3.)

11. Click **DNS Relay**.

12. Verify your Domain Name Setting. (See Figure 4.)

13. Verify your Primary DNS Server IP address setting. (See Figure 4.)



☐ DHCP Relay   
 ☒ **DNS Relay**   
 ☐ Routing Setup   
 ☐ Spanning Tree

**DNS & Default Gateway Configuration**

Domain Name:   
 Primary DNS Server:   
 Secondary DNS Server:   
 Default Gateway:   
 DNS Relay:

14. Verify your Secondary DNS Server IP address setting. (See Figure 4.)

Figure 4

15. Verify your Default Gateway IP address setting. (See Figure 4.)

16. Verify that you've enabled the DNS Relay function. (See Figure 4.)

17. Click **DHCP**.

18. Verify your DHCP entries. (See Figure 5.)

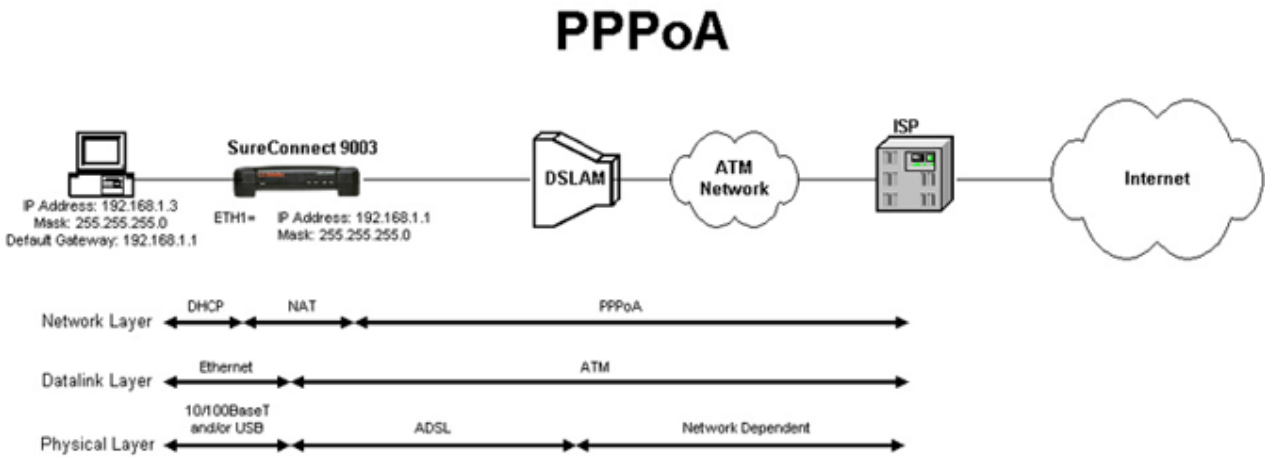
List of DHCP Entries						
Select	IfName	Subnet	NetMask	Start Ip	End Ip	Gateway
<input type="radio"/>	eth1	192.168.1.0	255.255.255.0	192.168.1.3	192.168.1.10	192.168.1.1
<div>AddDeleteStop</div>						

Figure 5

19. Verify that the server is running. (See Figure 5.)

• CONFIGURATION EXAMPLE

Setting Up PPPoA



Configuration Description

Dial-up Internet connections commonly use Point-to-Point Protocol (*PPP*). PPPoA is a method for running the PPP protocol over ATM. PPPoA...



- Allows ISPs to provide billing and access control similar to what dial up systems offer.
- Provides session authentication using either Password Authentication Protocol (*PAP*) or Challenge Handshake Authentication Protocol (*CHAP*).
- Permits router signals to easily negotiate link and network parameters between the router and ISP.

With PPPoA, the router achieves IP routing with Network Address Translation (*NAT*) for the LAN. The PPPoA-enabled router also supports dynamic IP address assignment to local network nodes. With dynamic assignment, the router acts as a DHCP server.

## Setup

1. Open the SureConnect Web User Interface (*WUI*). This example employs the Web User Interface. You can set up the Network Model with any of the router's three interfaces. The other two interfaces are the Terminal User Interface (*TUI*) and the Command-Line Interface (*CLI*). In any case, succeeding steps are similar.
2. Click **ADSL Standard**. The ADSL Standard Window opens.



3. Select the ADSL protocol that you'll use. For most users, Multi Mode is the right choice.
4. Click **Apply**.

- Click **WAN Setup**. The WAN Setup Window opens.

Select Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input type="radio"/>	PPPoA	36	VC	On	192.168.12.61	255.255.255.0	don	Chap	NA	NA	Active

- Below the Add button, notice the Current ATM PVC List. On this list, select any PVC that you don't need.

- Click **Delete**.

- Click **PPPoA**.

- Enter VPI and VCI values.

- Select your desired encapsulation mode. Your choices are: LLC/SNAP and VC Multiplexing.

- At Network Settings, enable NAPT and DHCP by selecting the appropriate boxes.

- In the PPPoA box, enter your ISP-assigned username.

13. In the PPPoA box, enter your ISP-assigned password.
14. In the PPPoA box, enter the authentication protocol that your ISP uses.
15. Click **Add**.
16. Click the Tools tab at the top of the window.
17. Click **Save & Restart**.
18. Click **Save**.
19. Click **Restart**.

## Verify Setup

1. Open the SureConnect Web User Interface (WUI).



Figure 1

2. Click the Service Provider Settings tab. This tab is on the top of the screen. (See Figure 1.)
3. Click **ADSL Standard**.

4. Verify that you’ve selected Multi Mode. (See Figure 2.)



Figure 2

5. Click the **WAN Setup**.

6. Verify that only the PPPoA configuration appears on the Current ATM PVC List. (This is the list on the bottom of the screen. See Figure 3.)

A screenshot of a web interface showing a table titled "Current ATM PVC List". The table has 11 columns: Select Mode, VPI, VCI, Encap, NAT, IP Address, Subnet Mask, User Name, Authentication Protocol, Idle Timeout, and PPP Mode. There is one row of data for PPPoA.

Select Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input checked="" type="radio"/> PPPoA	36	VC	On		192.168.12.61	255.255.255.0	den	Chap	NA	NA	Active

Figure 3

8. On the Current ATM PVC List, see “Encap.” Verify your Encapsulation Mode settings. (See Figure 3.)

9. On the Current ATM PVC List, see “NAT.” Verify that NAT is “On.” (See Figure 3.)

10. On the Current ATM PVC List, verify your ISP-assigned, PPPoA username. (See Figure 3.)

11. See the Current ATM PVC List (Figure 3). Verify the authentication protocol that your ISP uses. This protocol must appear on the list.

12. Click the Network tab at the top of the window.

13. Click **DHCP**.

14. Verify your DHCP entries. (See Figure 4.)

### List of DHCP Entries

Select	IfName	Subnet	NetMask	Start Ip	End Ip	Gateway
<input checked="" type="radio"/>	eth1	192.168.1.0	255.255.255.0	192.168.1.3	192.168.1.10	192.168.1.1

Add

Delete

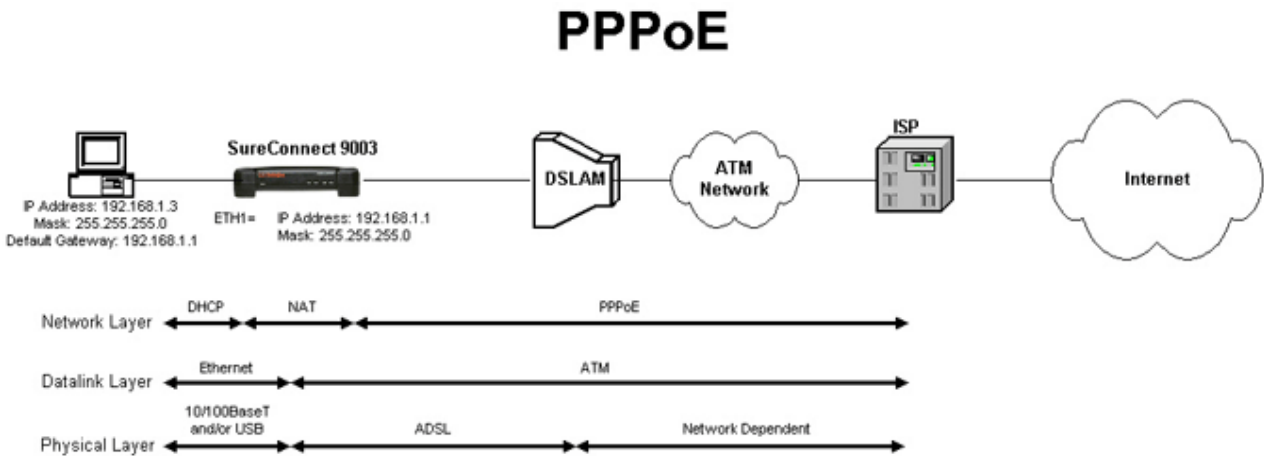
Stop

Figure 4

15. Verify that the DHCP server started. (See Figure 4.)

• **CONFIGURATION EXAMPLE**

**Setting Up PPPoE**



**Configuration Description**

Dial-up Internet connections commonly use Point-to-Point Protocol (*PPP*). PPPoE is a method for running the PPP protocol over Ethernet. PPPoE...

- Allows ISPs to provide billing and access control similar to what dial up systems offer.
- Provides session authentication using either Password Authentication Protocol (*PAP*) or Challenge Handshake Authentication Protocol (*CHAP*).

- Permits router signals to easily negotiate link and network parameters between the router and ISP.

With PPPoE, the router achieves IP routing with Network Address Translation (NAT) for the LAN. The PPPoE-enabled router also supports dynamic IP address assignment to local network nodes. With dynamic assignment, the router acts as a DHCP server.

## Setup

1. Open the SureConnect Web User Interface (*WUI*). This example employs the Web User Interface. You can set up the Network Model with any of the router's three interfaces. The other two interfaces are the Terminal User Interface (*TUI*) and the Command-Line Interface (*CLI*). In any case, succeeding steps are similar.
2. Click **ADSL Standard**. The ADSL Standard Window opens.



3. Select the ADSL protocol that you'll use. For most users, Multi Mode is the right choice.
4. Click **Apply**.
5. Click **WAN Setup**. The WAN Setup Window opens.

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• WAN Setup • ADSL Standard • PPPoE Relay • NAT Bridge • Bridging • Advanced

**WAN Setup**

VPI:  VCI:

Encapsulation Mode: ☒ LLC/SNAP ☐ Vc Multiplexing

Network Settings: ☐ Enable NAT ☐ Enable DHCP

☒ RFC1483 Bridged

☐ RFC1483 Routed  
WAN IP address:  WAN subnet mask:

☐ PPPoE  
User name:   
Password:   
Dialing Mode:  Idle Timeout (min):  Authentication:

☐ PPPoA  
User name:   
Password:  Authentication:

☐ Net  
IP address:  subnet mask:

**Current ATM PVC List**

Select Mode	VPI/VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input checked="" type="radio"/>	0	37	LLC	On	192.168.14.31	255.255.255.0	don	Chap	5	directActive

6. Below the Add button, notice the Current ATM PVC List. On this list, select any PVC that you don't need.
7. Click **Delete**.
8. Click **PPPoE**.
9. Enter VPI and VCI values.
10. Click the radio button for your desired encapsulation mode. Your choices are: LLC/SNAP and VC Multiplexing.
11. At Network Settings, enable NAT and DHCP by checking appropriate boxes.
12. In the PPPoE box, enter your ISP-assigned username.

13. In the PPPoE box, enter your ISP-assigned password.
14. In the PPPoE box, use the arrow to select the dialing mode. For most users, Direct is the right choice.
15. In the PPPoE box, enter the Idle Timeout value. Idle Timeout determines how long the link remains active during a period without data transfer. Idle Timeout only affects Auto Dialing Mode. The router doesn't use Idle Timeout for direct dialing mode.
16. In the PPPoE box, use the arrow to select the authentication protocol that your ISP uses.
17. Click **Add**.
18. Click the Tools tab at the top of the window.
19. Click **Save & Restart**.
20. Click **Save**.
21. Click **Restart**.

## Verify Setup

1. Open the SureConnect Web User Interface (WUI).



Figure 1



2. Click the Service Provider Settings tab. This tab is on the top of the screen. (See Figure 1.)

3. Click **ADSL Standard**. (See Figure 1.)

4. Verify that you've selected Multi Mode. (See Figure 2.)



Figure 2

5. Click **WAN Setup**.

6. Verify that only the PPPoE configuration appears on the Current ATM PVC List. (See Figure 3.)

7. See the Current ATM PVC List at the bottom of the screen (Figure 3). On this list, verify your settings for VPI and VCI.

8. On the Current ATM PVC List, see “Encap.” Verify your Encapsulation Mode settings. (See Figure 3.)

Current ATM PVC List

Select	Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input type="radio"/>	PPPoE	37	LLC	On		192.168.14.31	255.255.255.0	don	Chap	5	direct	Active

Figure 3

9. On the Current ATM PVC List, see “NAT.” Verify that NAT is “On.” (See Figure 3.)

10. On the Current ATM PVC List, verify your ISP-assigned, PPPoE username. (See Figure 3.)

11. In the PPPoE box, verify for your dialing mode selection. For most users, direct is the right choice. (See Figure 3.)

12. In the PPPoE box, verify your desired Idle Timeout value. (See Figure 3.)

13. In the PPPoE box, find the authentication protocol. Verify that your ISP uses this protocol. (See Figure 3.)

14. Click the Network tab at the top of the window.



Select	IfName	Subnet	NetMask	Start Ip	End Ip	Gateway
<input type="radio"/>	eth1	192.168.1.0	255.255.255.0	192.168.1.3	192.168.1.10	192.168.1.1

15. Click **DHCP**.

Figure 4

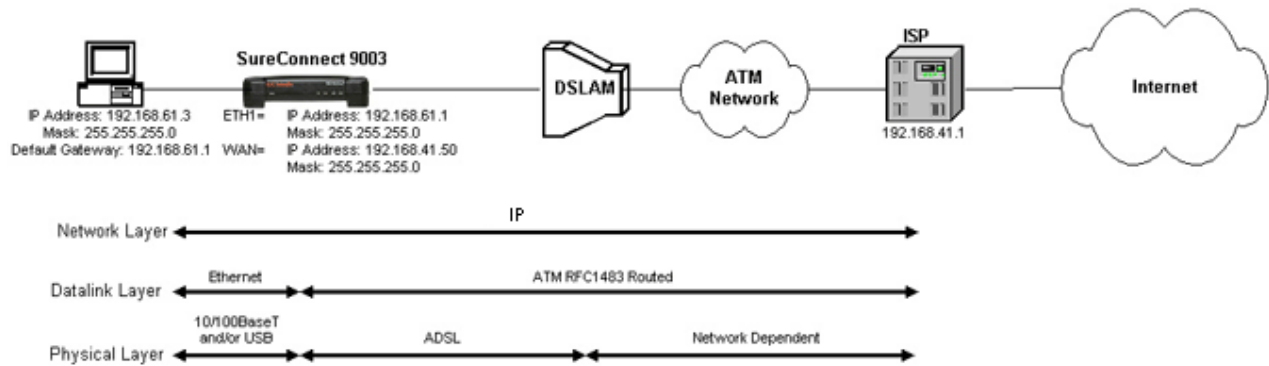
16. Verify your DHCP setting. (See Figure 4.)

17. Verify that the DHCP server started. (See Figure 4.)

• **CONFIGURATION EXAMPLE**

***Setting Up RFC1483 Routing without NAT***

# RFC1483 Routed without NAT Enabled



## Configuration Description

When you use RFC1483 Routing, the router encapsulates IP packets over the ATM virtual circuit. This circuit connects the router and the Internet service provider (*ISP*). In this configuration, routers ...

- Segment LANs to balance traffic within workgroups
- Filter traffic for security purposes and policy management
- Connect remote offices at the edge of the network

## Setup

1. Open the SureConnect Web User Interface (*WUI*). This example employs the Web User Interface. You can set up the Network Model with any of the router's three interfaces. The other two interfaces are the Terminal User Interface (*TUI*) and the Command-Line Interface (*CLI*). In any case, succeeding steps are similar.
2. Click **ADSL Standard**. The ADSL Standard Window opens.



3. Select the ADSL protocol that you'll use. For most users, Multi Mode is the right choice.
4. Click **Apply**.
5. Click **WAN Setup**. The WAN Setup Window opens.

**SureConnect™ ADSL Utility** ReadySet.Connect™

• **WAN Setup** • ADSL Standard • PPPoE Relay • NAT Bridge • Bridging • Advanced

**WAN Setup**

VPI: 0 VCI:

**Encapsulation Mode**  
☒ LLC/SNAP ☐ VC Multiplexing

**Network Settings**  
☐ Enable NAT ☐ Enable DHCP

☒ RFC1483 Bridged  
☐ RFC1483 Routed  
 WAN IP address: WAN subnet mask:

☐ PPPoE  
 User name: Password:   
 Dialing Mode: Direct Idle Timeout (min): 5 Authentication: CHAP

☐ PPPoA  
 User name: Password:   
 Authentication: CHAP

☐ Man  
 IP address: subnet mask:

Add Modify Delete

**Current ATM PVC List**

Select	Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input checked="" type="checkbox"/>	Routed	0	38	LLC	Off	192.168.43.50	255.255.255.0	NA	NA	NA	NA	NA

6. Below the Add button, notice the Current ATM PVC List. On this list, select any PVC that you don't need.
7. Click **Delete**.
8. Click **RFC1483 Routed**.
9. Enter VPI and VCI values.
10. Click the radio button for your desired encapsulation mode. Your choices are: LLC/SNAP and VC Multiplexing.
11. At Network Settings, be sure that NAT and DHCP *don't* have a checkmark.
12. In the RFC1483 Routed box, enter the static IP address and mask that your ISP supplied.
13. Click **Add**.
14. Click the Network tab at the top of the window.
15. Click **LAN Setup**. The LAN Setup Window opens.



16. This step changes the LAN IP address that connects to the router's Web user interface. In the LAN IP Address box, enter the new Ethernet 1 local LAN IP address.
17. This step changes the network subnet that connects to the router's Web user interface. In the Subnet box, enter the new Ethernet 1 local Subnet mask.
18. This step locks in your LAN IP address and network subnet changes from the previous steps. Click **Apply**. This action saves your current configuration and restarts the router.
19. Change these items on your PC's to match the new network that the router is on...

- IP address
- Subnet mask
- Default gateway
- DNS IP Address

If you don't know how to complete this step, refer to your PC's manual. Most Windows PCs allow access to network settings through the **Start Menu** at **Settings**. Look for a listing such as "Network and Dial-Up Connections." Also refer to the Quick Installation Guide.

20. Open the SureConnect Web User Interface (*WUI*).
21. Click the Network tab at the top of the window.

22. Click **Routing Setup**. The Routing Setup Window opens.



23. The next few steps add the WAN Default Gateway supplied by your ISP. Select the entry with these specifications...

- Destination Network ID: 0.0.0.0
- Destination Subnet Mask: 0.0.0.0.

24. Click **Delete**.

25. Enter 0.0.0.0 into the Destination Network ID box.

26. Enter 0.0.0.0 into the Destination Subnet Mask box.

27. At the Next Hop IP box, enter the WAN Default Gateway supplied by your ISP.

28. Click **Add**.

29. Click the Tools tab at the top of the window.

30. Click **Save & Restart**.

31. Click **Save**.

32. Click **Restart**.

## Verify Setup

1. Open the SureConnect Web User Interface (WUI).



Figure 1

2. Click the Service Provider Settings tab. This tab is on the top of the screen. (See Figure 1.)

3. Click **ADSL Standard**. (See Figure 1.)

4. Verify that you've selected Multi Mode. (See Figure 2.)



Figure 2

5. Click **WAN Setup**.

6. Verify that only the Routed configuration appears on the Current ATM PVC List. (This is the list on the bottom of the screen. See Figure 3.)

7. See the Current ATM PVC List at the bottom of the screen (Figure 3). On this list, verify your settings for VPI and VCI.



Select	Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input type="radio"/>	Routed	38	LLC	Off		192.168.41.50	255.255.255.0	NA	NA	NA	NA	NA

Figure 3

8. On the Current ATM PVC List, see "Encap." Verify your Encapsulation Mode settings. (See Figure 3.)

9. On the Current ATM PVC List, see "NAT." Verify that NAT is "Off." (See Figure 3.)

10. Click the Network tab at the top of the window.



**LAN Setup**

LAN IP Address: 192.168.61.1

Subnet: 255.255.255.0

Apply Cancel

11. Click **LAN Setup**.

Figure 4

12. Verify your LAN IP address setting. (See Figure 4.)

13. Verify your subnet setting. (See Figure 4.)



14. Click the Routing Setup tab at the top of the window.

15. Verify your Destination Network ID setting. (See Figure 5.)

16. Verify your Destination Subnet Mask setting. (See Figure 5.)

17. Verify your Next Hop ID setting. (See Figure 5.)

**Routing Setup**

RIP Information  
 RIP Status:  Version:

Route Configuration  
 Destination Network ID:   
 Destination Subnet Mask:   
 Next Hop IP:

**List of Static Routes**

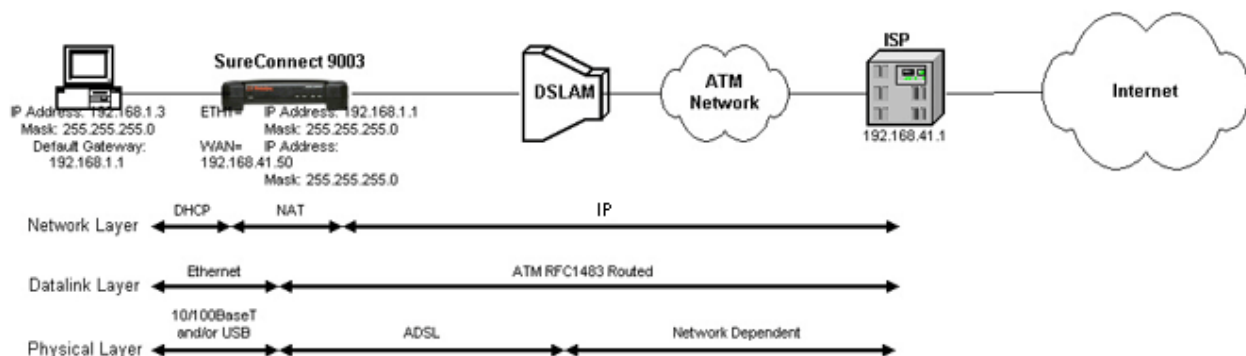
Select	Network ID	Subnet Mask	Next Hop IP
<input type="radio"/>	0.0.0.0	0.0.0.0	192.168.41.1
<input type="radio"/>	192.168.41.0	255.255.255.0	192.168.41.50
<input type="radio"/>	192.168.61.0	255.255.255.0	192.168.61.1

Figure 5

## • CONFIGURATION EXAMPLE

### Setting Up RFC1483 Routing with NAT & DHCP

#### RFC1483 Routed with NAT & DHCP



#### Configuration Description

When you use RFC1483 Routing, the router encapsulates IP packets over the ATM virtual circuit. This circuit connects the router and the Internet service provider (ISP). In this configuration, routers ...

- Segment LANs to balance traffic within workgroups
- Filter traffic for security purposes and policy management
- Connect remote offices at the edge of the network

- Can route IP with network address translation (NAT) for the LAN

## Setup

1. Open the SureConnect Web User Interface (*WUI*). This example employs the Web User Interface. You can set up the Network Model with any of the router's three interfaces. The other two interfaces are the Terminal User Interface (*TUI*) and the Command-Line Interface (*CLI*). In any case, succeeding steps are similar.
2. Click **ADSL Standard**. The ADSL Standard Window opens.



3. Select the ADSL protocol that you'll use. For most users, Multi Mode is the right choice.
4. Click **Apply**.
5. Click **WAN Setup**. The WAN Setup Window opens.

**WAN Setup**

Encapsulation Mode: ☒ LLC/SNAP ☐ VC Multiplexing

Network Settings: ☐ Enable NAPT ☐ Enable DHCP

☒ RFC1483 Bridged

☐ RFC1483 Routed

WAN IP address:  WAN subnet mask:

☐ PPPoE

User name:  Password:

Dialing Mode:  Idle Timeout (min):  Authentication:

☐ PPPoA

User name:  Password:  Authentication:

☐ Mer

IP address:  Subnet mask:

Add Modify Delete

**Current ATM PVC List**

Select Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode	Status
<input type="radio"/> Routed	0	38	LLC	On	192.168.41.50	255.255.0	NA	NA	NA	NA	NA

6. Below the Add button, notice the Current ATM PVC List. On this list, select any PVC that you don't need.
7. Click **Delete**.
8. Click **RFC1483 Routed**.
9. Enter VPI and VCI values.
10. Click the radio button for your desired encapsulation mode. Your choices are: LLC/SNAP and VC Multiplexing.
11. At Network Settings, check NAPT.
12. At Network Settings, check DHCP.
13. In the RFC1483 Routed box, enter the static IP address and mask that your ISP supplied.

14. Click **Add**.

15. Click the Network tab at the top of the window.

16. Click **DNS Relay**. The DNS & Default Gateway Configuration Window opens.



17. At the DNS Relay box, select **Disable** from the dropdown menu.

18. Click **Apply**.

19. If your ISP provided a Domain Name, enter the name here. (Domain Name isn't a required field. The ISP might not provide a domain name.)

20. Enter the Primary DNS Server IP address that your ISP provided.

21. Enter the Secondary DNS Server IP address that your ISP provided. (Secondary DNS Server isn't a required field. The ISP might not provide an IP address for a secondary DNS server.)

22. Enter the Default Gateway IP address that your ISP provided.
23. At the DNS Relay box, select **Enable** from the dropdown menu.
24. Click **Apply**.
25. Click the Tools tab at the top of the window.
26. Click **Save & Restart**.
27. Click **Save**.
28. Click **Restart**.

## Verify Setup

1. Open the SureConnect Web User Interface (WUI).



2. Click the Service Provider Settings tab. This tab is on the top of the screen. (See Figure 1.)

Figure 1

3. Click **ADSL Standard**. (See Figure 1.)

4. Verify that you’ve selected Multi Mode. (See Figure 2.)



Figure 2

5. Click **WAN Setup**.

6. Verify that only the Routed configuration appears on the Current ATM PVC List. (This is the list on the bottom of the screen. See Figure 3.)

7. See the Current ATM PVC List at the bottom of the screen (Figure 3). On this list, verify your VPI and VCI settings.

A screenshot of a table titled "Current ATM PVC List". The table has 11 columns: Select, Mode, VPI, VCI, Encap, NAT, IP Address, Subnet Mask, User Name, Authentication Protocol, Idle Timeout, and PPP Mode. There is one row of data with the following values: a radio button, "Routed", "0", "38", "LLC", "Off", "192.168.41.50", "255.255.255.0", "NA", "NA", "NA", and "NA".

Select	Mode	VPI	VCI	Encap	NAT	IP Address	Subnet Mask	User Name	Authentication Protocol	Idle Timeout	PPP Mode
<input type="radio"/>	Routed	0	38	LLC	Off	192.168.41.50	255.255.255.0	NA	NA	NA	NA

Figure 3

8. On the Current ATM PVC List, see “Encap.” Verify your Encapsulation Mode settings. (See Figure 3.)

9. On the Current ATM PVC List, see “NAT.” Verify that NAT is “On.” (See Figure 3.)

10. Click the Network tab at the top of the window.

11. Click **DNS Relay**.

12. Verify your Domain Name setting. (See Figure 4.)

13. Verify your Primary DNS Server setting. (See Figure 4.)

14. Verify your setting Secondary DNS Server setting. (See Figure 4.)

**DNS & Default Gateway Configuration**

Domain Name:

Primary DNS Server:

Secondary DNS Server:

Default Gateway:

DNS Relay:

Figure 4

15. Verify your Default Gateway setting. (See Figure 4.)

16. In the DNS Relay Box, verify that you've selected "Enable." (See Figure 4.)

17. Click the Network tab at the top of the window.

18. Click **DHCP**.

19. Verify your DHCP setting. (See Figure 5.)

**List of DHCP Entries**

Select	IfName	Subnet	NetMask	Start Ip	End Ip	Gateway
<input type="radio"/>	eth1	192.168.1.0	255.255.255.0	192.168.1.3	192.168.1.10	192.168.1.1

Figure 5

20. Verify that the DHCP server started. (See Figure 5.)



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# U.S. Robotics SureConnect™ ADSL Ethernet/USB Router User Guide

Windows 95, 98, NT 4.0, Me, 2000, XP or later, Mac and Linux

## Uninstalling the Router

[Windows 95](#)

[Windows 98/2000](#)

[Windows XP](#)

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### Windows 95

1. Click Windows **Start**, **Settings**, and then **Control Panel**.
2. Double-click **Add/Remove Programs** icon.
3. On the Install/Uninstall tab, select **U.S. Robotics SureConnect ADSL Ethernet/USB Router**. You may have to scroll down to locate this program.
4. Click **Remove**.
5. The Reinstall or Uninstall screen will display. Click **Uninstall** and select **Yes** if the display prompts you to confirm the uninstallation. All components will uninstall from the computer.

### Windows 98 and 2000

1. Click Windows **Start**, **Settings**, and then **Control Panel**.
2. Double-click **Add/Remove Programs**.
3. The Add/Remove Programs screen will display all programs that you currently have installed. Locate and select the **U.S. Robotics SureConnect ADSL Ethernet/USB Router**. You may have to scroll down to locate this program.
4. Click **Add/Remove** in Windows 98 or **Change/Remove** in Windows 2000.



5. The Reinstall or Uninstall screen will display. Click **Uninstall** and then click **Next**. All components will uninstall from the computer.

## Windows XP

1. Click Windows **Start** and then **Control Panel**.
2. Double-click **Add/Remove Programs**.
3. The Install/Uninstall tab will display all programs that you currently have installed. Locate and select the **U.S. Robotics SureConnect ADSL Ethernet/USB Router**. You may have to scroll down to locate this program.
4. Click **Add/Remove**. The Reinstall or Uninstall screen will display. Click **Uninstall** and then click **Next**. All components will uninstall from the computer.

## Windows NT

1. Click Windows **Start, Settings**, then **Control Panel**.
2. Double-click **Add/Remove Program**.
3. The Add/Remove Programs screen will display all programs that you currently have installed. Locate and select the **U.S. Robotics SureConnect ADSL Ethernet/USB Router**. You may have to scroll down to locate this program.
4. Click **Add/Remove**.
5. The Reinstall or Uninstall screen will display. Click **Uninstall** and then click **Next**. All components will uninstall from the computer.

## Macintosh and Linux

Unplug all cables from the computer and the router.

Ready. Set. Connect.



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# U.S. Robotics *SureConnect*™ ADSL Ethernet/USB Router User Guide

**Windows 95, 98, NT 4.0, Me, 2000, XP or later, Mac and Linux**

## Troubleshooting

### *Troubleshooting Checklist*

To help diagnose the problem, use the checklist below.

- Confirm that you have secured the power adapter to the router and to an active wall outlet. The "PWR" LED should illuminate.
- Confirm that you have secured the telephone cable to the telephone wall jack and to the router. The "ADSL" LED should illuminate.
- Confirm that you have secured the Ethernet cable to the "ENET1" and/or "ENET2" port on the router and to the computer's network interface card. The "ENET1" or the "ENET2" LED, or both should illuminate.
- If you're using the USB cable: Confirm that you've secured the USB cable to the "USB" port on the router and computer. The "USB" LED should illuminate.

### *Status LEDs*

The front of the U.S. Robotics SureConnect ADSL Ethernet/USB Router has five LEDs. The first from the left is the "PWR" LED. The second and third are the data transfer "ENET1" and "ENET2" LEDs. The fourth is the "USB" LED. The fifth is the "ADSL" LED. LED conditions below indicate the router's operational status.

PWR	On Green	Receiving power from the wall jack power supply.
	Off	Detected no power.
	On Green/10 Mbps On Orange/100Mbps	Established and detected a physical connection through the Ethernet cable between router and computer.

ENET1 or ENET 2	Flashing Green or Orange	Flowing data traffic.
	Off	Did not establish a physical connection between router and computer.
USB	On Green	Established and detected a physical connection through the USB cable between router and computer.
	Flashing Green	Flowing data traffic.
	Off	Did not establish a physical connection between router and computer.
ADSL	On Green	Established a DSL link.
	Flashing Green	Negotiating a DSL link.
	Off	The DSL link failed.

## Troubleshooting Tips

### **None of the LEDs illuminates when I turn on the router.**

- Check the connection between the power adapter, router, and wall outlet.
- Confirm that you're using the power adapter that came with your U.S. Robotics SureConnect ADSL Ethernet/USB Router package.

### ***The ADSL light is flashing or is not illuminated.***

- Make sure that the telephone cable connects properly at the "ADSL" port on the rear of the router and at the phone wall jack.

### ***I can't connect to the router's configuration utility.***

#### **Possible Solution 1:**

- Make sure that your Ethernet or USB cables connect properly and securely.
- Make sure that you've plugged in the power cord.

#### **Possible Solution 2:**

- Make sure that your PC is using an IP address within the range of 192.168.1.2 to 192.168.1.254.
- Make sure that the address of the subnet mask is 255.255.255.0.

- If necessary, the Default Gateway data should be at 192.168.1.1.
- To verify these settings, perform the following steps:

**Windows 95, 98, or Me Users:**

1. Click Windows **Start**.
2. Click **Run**.
3. Type winipcfg.
4. Click **OK**.
5. Check the IP Address, Subnet Mask, Default Gateway data. Is this data correct?
6. If the data isn't correct, click **Release All**. Then click **Renew All**.

**Windows NT, 2000, or XP Users:**

1. Click Windows **Start**.
2. Click **Run**.
3. Type cmd.
4. Click **OK**.
5. At the DOS prompt, type ipconfig/all.
6. Check the IP Address, Subnet Mask, Default Gateway data. Is this data correct?
7. If the data isn't correct...
  - Type ipconfig/release.
  - Press **Enter**.
  - Type ipconfig/renew.
  - Press **Enter**.

### Possible Solution 3:

- Verify the connection setting of your Web browser.
  - Verify that the HTTP Proxy feature of your Web browser is disabled. Make these verifications so that your Web browser can read configuration pages inside your router.
  - Launch your Web browser.

#### Internet Explorer Users:

1. Click **Tools**, **Internet Options**, and then click the Connections tab.
2. Select **Never dial a connection**, click **Apply**, and then click **OK**.
3. Click **Tools** and then click **Internet Options**.
4. Click **Connections** and then click **LAN Settings**.
5. Make sure none of the check boxes are selected and click **OK**.
6. Click **OK**.

#### Netscape Navigator Users:

1. Click **Edit**, **Preferences**, and then double-click **Advanced** in the Category window.
  2. Click **Proxies**, select **Direct connection to the Internet**, and then click **OK**.
  3. Click **Edit** again and then click **Preferences**.
  4. Under Category, double-click **Advanced** and then click **Proxies**.
  5. Select **Direct connection to the Internet** and click **OK**.
  6. Click **OK**.
- If you can't connect to the router, see the Troubleshooting Ping procedure below in these Troubleshooting Tips.

***I can't access the Internet.***

### **Possible Solution:**

- Make sure that you've connected the power cord.
- Make sure that you've correctly connected Ethernet or USB cables between the router and PCs.
- Make sure that you have a DSL link.
- Make sure that you have an active ISP account.
- See the router's Service Provider Setting Page under WAN Setup. Check your settings for VCI and VPI.
- See the router's Service Provider Setting Page under WAN Setup. Check your settings for username and password.
- If you can't access the Internet, refer to the Troubleshooting Ping Procedure on this Web page.

***I don't know if my assigned IP Address is Static or Dynamic.***

### **Possible Solution:**

- If you have active DSL service, you probably have a Dynamic IP address.
- Check with your service provider to verify this information. Some providers assign Static IP addresses.
- If your service provider uses dynamic host configuration protocol, verify that you've enabled DHCP.

***While trying to check my network configuration settings in Windows Me or XP, I can't find the Network icon.***

### **Possible Solution:**

- The default setting in Windows Me and XP is to not show all of the icons within the Control Panel. Windows ME Users: Click Windows **Start**, **Settings**, and then **Control Panel**. Windows XP Users: Click Windows **Start**, and then **Control Panel**.
- Within Control Panel, click **View all Control Panel options** on the left side of the screen. All Control Panel icons should now be visible.

***I don't know how to configure the TCP/IP protocol to work with the router.***

### **Possible Solution:**

1. The router must access a network interface card inside your PC. Your PC may not recognize this internal network interface card. You may be able to resolve this problem by installing or adding the correct hardware.
2. Open the help menu system in your operating system.
3. Check the help messages for TCP/IP.

### ***Troubleshooting Ping Procedure***

1. Click Windows **Start** and then click **Run**. In the **Run** dialog box, Windows 95, 98, and Me users: Type command and click **OK**. Windows NT, 2000, and XP users: Type cmd and click **OK**. The command line screen opens.
2. Type **Ping 127.0.0.1**. This is your local host address. The address assures that TCP/IP is installed and functions properly. If you can't complete this ping, disconnect the router and then repeat the installation procedure.
3. Type **Ping** followed by your IP address. This assures that your PC responds to requests. If you can't complete this ping, make sure all the cables connect properly and that all the correct drivers are installed.
4. Type **Ping** followed by your gateway address to check the communication with your gateway. (The default gateway address is 192.168.1.1.) This assures that you can connect to other machines and the router. If you can establish communication with the router, you can access the Administration page and configure settings. If you can't complete this ping, make sure that the router power cord is plugged in. Also make sure that the router is properly connected to your PC.
5. Type **Ping** followed by the outside Internet address of your router. This is the address that is provided either by your ISP or by the outside LAN. This procedure will assure that your router functions properly and allows traffic to pass through.
6. Type **Ping** followed by your known DNS server address. This will allow you to resolve valid Internet host names to IP addresses and to verify that you can access the Internet.

### ***What If I don't receive a return message from a successful ping?***

- No return message indicates that the PC can't communicate to the router through IP address assignment. Check the address in the configuration utility.
- If necessary, correct the address in the Console Mode.
- After making corrections, continue with the ping procedure.

## **Technical Support**

Go to the Support section of the U.S. Robotics Web site:

<http://www.usr.com/support>

- See the FAQ and Troubleshooting Web pages for your specific product. These pages address the most common difficulties that users experience.
- If you can't connect to the Internet, contact your ISP for assistance.
- For current support contact information, go to the following Web site:

<http://www.usr.com/broadbandsupport>

Ready. Set. Connect.







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# U.S. Robotics SureConnect™ ADSL Ethernet/USB Router User Guide

Windows 95, 98, NT 4.0, Me, 2000, XP or later, Mac and Linux

## Glossary

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [GH](#) | [IJKL](#) | [M](#) | [N](#) | [OP](#) | [QR](#) | [S](#) | [TU](#) | [V](#) | [WXYZ](#)

### A

**ADSL (Asymmetric Digital Subscriber Line)** - Transports information to and from customers and networks. ADSL employs different upstream and downstream data rates. The “asymmetric” name refers to these differing rates.

**AH (Authentication Header)** – RFC2402 defines AH. AH provides integrity and authentication through the shared key hashing algorithms (HMAC-MD5, HMAC-SHA1). AH provides authentication for as much of the IP header as possible. AH also authenticates upper level protocol data.

**AM (Amplitude Modulation)** Modulation method used by modems, radio, and DSL equipment. The signal modulates or alters the amplitude or intensity of the carrier. In regular AM, the carrier is a sinewave. The amplitude of the modulated carrier changes in proportion to signal amplitude. AM creates two identical sidebands on either side of the carrier. These sidebands contain the signal data. Either sideband can be attenuated or suppressed without harming the signal data. With an equivalent signal, AM tends to require less bandwidth than FM does. AM's disadvantage is that it's more subject to impulse noise and static than FM is.

**ATM (Asynchronous Transfer Mode)** - Protocol that packs digital information into 53-byte cells. The cells switch throughout a network over virtual circuits.

**Average Cell Rate** - Maximum sustainable or average rate (Cells/second) for sending cells to the network. Average Cell Rate specifies bandwidth utilization. This value must always be less than or equal to Peak Cell Rate.

## B

**Bandwidth** - Amount of data that can be transmitted over a given time period.

**BPDU (Bridge Protocol Data Unit)** - Data messages exchanged across switches in an extended LAN with a spanning tree protocol topology. BPDU packets assure that data arrives at the intended destination. These packets contain information on addresses, costs, ports, and priorities. Network loop detection involves exchanging BPDU messages across bridges. Loop deletion entails placing redundant switch ports in a backup (blocked) state and shutting down selected bridge interfaces.

**Bridge** – A device that connects two LAN segments together. These LAN segments may be of similar or dissimilar types, such as Ethernet and Token Ring. Inserting a bridge into a network segments the network. The bridge improves performance by keeping traffic contained within bridge segments.

**Bridge Loop** - Path that links one network segment to another. The spanning tree protocol avoids bridge loops.

**Bridge Priority** - Determines which bridge becomes the root bridge.

**Burst Size (Cells)** - Maximum number of cells that the user can send at peak rate in a burst. We measure burst size from within a sustainable rate.

## C

**CAP (Carrierless Amplitude and Phase Modulation)** Modulation method used by modems and DSL equipment. Based on QAM. Signals modulate two wideband signals using passband modulation. CAP permits two to nine bits per frequency cycle.

**Carrier wave** - Periodic waveform. A carrier may be modulated or unmodulated. It may also be continuous or switched. Typically, modems modulate the carrier wave with a data signal. Modulation represents the data signal by impressing a variation on some characteristic of the carrier wave. For instance, a circuit may represent the signal as a proportional shift in carrier amplitude, frequency, or phase. Demodulation (detection) eliminates the carrier wave and reproduces the signal. The carrier frequency must be significantly greater than the signal frequency. A modem may simultaneously apply more than one signal and more than one modulation method to the same carrier. The modulation method may suppress the carrier before transmission. In that case, the receiver must reinsert the carrier before demodulation can occur.

**CBR (Constant Bit Rate)** - Service type that supports real-time applications with a fixed bandwidth. These applications, such as a video stream, produce data at regular

intervals. The user can specify how much bandwidth that he wishes to reserve.

**CDVT (Cells)** - Parameter that constrains the number of cells that the user can send to the network at the maximum line rate.

**Cycle** - One half of a periodic wave. For instance, a sinewave includes one positive and one negative cycle.

## D

**DHCP (Dynamic Host Configuration Protocol)** - Protocol for automatic TCP/IP configurations. DHCP provides static and dynamic address allocation and management.

**DHCP Relay** - Suppose that a Dynamic Host Configuration Protocol (DHCP) server resides on a different LAN than the node broadcasting for DHCP service. Then the DHCP broadcast request must be forwarded across the router/WAN to a subnet where a DHCP server resides. To assure receipt of an IP address that corresponds to this subnet, the router must use a DHCP relay. The router needs to know the IP address of the DHCP server. With this address, the router can direct the request to the appropriate DHCP server.

**DMT (Discrete Multitone)** - Most common DSL modulation method. DMT creates 256 channels across the usable frequency spectrum. Each channel measures 4.3125KHz wide. Dividing the spectrum into channels allows DMT to function well in spite of nearby AM radio transmitters. The DMT modulator and demodulator is the FFT (Fast Fourier Transform) algorithm. Inside each channel, the modulation technique is QAM. Within each channel, the number of bits per symbol may be independently selected. Independent selection allows a DMT modem to be rate adaptive. Both G.DMT and G.Lite use DMT.

**DNS (Domain Naming System)** - Mechanism used in the Internet for translating names of host computers into IP addresses.

**DNS Relay** - DNS requests that the router forwards from a LAN node to a known DNS server. The router uses a DNS relay when the router functions as a NAT (Network Address Port Translation) device. The requests arrive at a DNS server over the WAN link. To function as a NAT, the router requires DNS relay settings.

**DSLAM (Digital Subscriber Line Access Multiplexer)** - Network device that receives signals from multiple customer Digital Subscriber Line connections. DSLAM places signals on high speed lines with multiplexing techniques for the fastest phone line technology available.

## E

**ESP (Encapsulating Security Payload)** – ESP provides confidentiality. Optionally, ESP also provides integrity, authentication, anti-replay service, and limited traffic flow confidentiality. Options selected at the time of Security Association establishment determine provided services. For confidentiality, shared ESP supports shared key encryption algorithms, such as DES and Triple DES.

## F

**Filter** - Operating parameter used in LAN bridges and routers. When set, the filter causes bridges and routers to block transfer of packets between LANs. The term "filter" also applies to a hardware device, such as a microfilter. When installed, this device reduces interference between DSL signals and telephone signals.

**Forward Delay Time** - Timeout value employed by all bridges in the bridged LAN. The root sets the forward delay value.

**FM (Frequency Modulation)** Modulation method used by modems, radio, and DSL equipment. The signal modulates or alters the frequency or pitch of the carrier. In regular FM, the carrier is a sinewave. The frequency of the modulated carrier changes in proportion to signal amplitude. FM creates an infinite number of sidebands. These sidebands contain the signal data. With an equivalent signal, FM tends to require more bandwidth than AM does. FM's advantage is that it's less subject to impulse noise and static than AM is.

**Frame** - Variable length information unit that contains packets. Also refers to a transmission frame, a fixed-length unit that carries bits across a physical link. A transmission frame is a framed transport component. DSL technologies use frames. Also refers to a frame of video, one image in a video sequence

## G

**Gateway** - Entrance to and exit from a communications network.

**G.DMT** - The ADSL standard approved by the International Telecommunications Union (ITU). G.DMT indicates full-rate ADSL, which provides standards for higher speed ADSL than G.Lite. G.DMT provides maximum data rates of 8 Mbps downstream from the subscriber and 1.5 Mbps upstream from the subscriber.

**G.lite** - Standard way to install Asymmetric Digital Subscriber Line service. Over regular phone lines, G.Lite makes possible Internet connections to home and business computers at up to 1.5 Mbps. Officially known as G.992.2.

## H

**Hello Time** - Time interval between generations of configuration BPDUs. The root bridge generates configuration BPDUs.

## I

**ICMP - (Internet Control Message Protocol)** - A TCP/IP protocol for sending error and control messages. For example, a router uses ICMP to notify the sender that the router's destination node is unavailable. A ping utility sends ICMP echo requests to verify the existence of an IP address.

**Interface Name** - Router interface that will be configured.

**IP (Internet Protocol)** - Protocol that allows a packet of information to travel through many networks and LANs.

**IP Address** - IP addresses deliver packets of data across a network. These addresses differentiate the source and destination IP address and keep them constant. When a router port detects a packet, the router checks the routing table. The port attempts to match the network number of the destination IP address with its routing table entry. If the port finds a match, it forwards the packet to the destination network. With no match, the port forwards the packet to a router defined as the default gateway.

## J

## K

## L

**LAN (Local Area Network)** - Network base covering a local geographic area. A LAN connects computers in the same building or area.

**Link Cost** - Cost associated with the interface. Based on this cost, the bridge decides which link to forward data over.

## M

**MAC Address (Local Area Network)** - Unique serial number burned into Ethernet adapters. Distinguishes the network card from others.

**Max Age Time** Timeout value that all bridged LAN bridges use. The root bridge sets the Max Age value.

**MAC Filter (Local Area Network)** - Method of allowing or rejecting WAN access for specific machines.

**Microfilter** - Device that separates the ADSL data signal from the telephone signal so that the ADSL data signal does not interfere with the telephone device.

**Modulation** - Varying elements of electrical carrier waves in a manner that represents signal data. Demodulation restores the signal data. A modulated signal requires more bandwidth and an unmodulated signal does. The bandwidth increase results from the creation of sidebands during modulation. The sidebands contain the signal. AM creates two, identical sidebands on either side of the carrier. FM creates an infinite number of sidebands.

**MTU (Maximum Transmission Unit)** - Parameter that limits the size of packets that transmit on an interface. Not all interfaces support the MTU parameter. Some interfaces, like Ethernet, have range restrictions (80 - 1500).

## N

**NAP (Network Access Point)** - Public network exchange facility where ISPs connect while peering. NAP connections determine how the Internet routes traffic.

**Next Hop IP** - IP address or Gateway used to arrive at the destination address.

**NRT-VBR (Non Real Time-Variable Bit Rate)** - Service type that supports applications that have no constraints on delay and delay variation, but still have variable-rate and burst traffic characteristics.

## O

## P

**PAM (Pulse Amplitude Modulation)** Modulation method used by modems and DSL equipment. The signal modulates or alters the amplitude or intensity of the carrier. In regular AM, the carrier is a sinewave. In PAM, the carrier is a periodic series of DC pulses.

**PCM (Pulse Code Modulation)** - Digital modulation method for transmitting analog data. PCM signals are binary. These signals can represent any analog data with only two states, logic 0 and logic 1.

**PDM (Pulse Duration Modulation)** Modulation method. Signal modulates or alters the duty cycle of the pulse. In PDM, the carrier is a pulse stream. Also called PWM (Pulse Width Modulation).

**Peak Cell Rate** - Maximum rate (Cells/second) for sending cells to the network.

**Phase** - Position of a periodic waveform.

**PM (Phase Modulation)** Modulation method used by modems, radio, and DSL equipment. The signal modulates or alters the phase or position of carrier waves. In regular PM, the carrier is a sinewave. The phase of the modulated carrier changes in proportion to signal amplitude.

**Port Priority** - Parameter that determines which port becomes the root bridge port.

**POTS (Plain Old Telephone Service)** - Basic voice service available in residences throughout the United States.

**PP (Point-to-Point Protocol)** – Communication protocol for dialing up the Internet over a serial link. Such serial links include a POTS and an ISDN line. PPP establishes the session between the user's computer and the ISP. PPP uses the Link Control Protocol (LCP), which also handles authentication (PAP, CHAP, etc.), compression, and encryption.

**PPM (Pulse Position Modulation)** Modulation method used by modems and DSL equipment. The signal modulates or alters the location of a pulse in the carrier. The carrier is a stream of pulses.

**PPPoA (Point-to-Point Over ATM)** – Dial-up Internet connections typically use PPP protocol. PPPoA is a method for running PPP protocol over ATM. PPPoA... .

- offers service providers similar billing and access control with a presence in dial-up services.
- provides session authentication using Password Authentication Protocol (PAP).
- provides session authentication using Challenge Handshake Authentication Protocol (CHAP).
- achieves session accounting and conservation of bandwidth by closing down unused sessions.
- allows the IAD/Router and ISP link to easily negotiate network parameters.



**PPPoE (Point-to-Point Over Ethernet)** – Dial-up Internet connections typically use PPP protocol. PPPoE is a method for running PPP protocol over Ethernet. PPPoE...

- offers service providers similar billing and access control with a presence in dial-up services.
- provides a low-cost solution to multiple host maintenance at the customer premises.
- provides session authentication using Password Authentication Protocol (PAP).
- provides session authentication using Challenge Handshake Authentication Protocol (CHAP).
- achieves session accounting and conservation of bandwidth by closing down unused sessions.
- allows the IAD/Router and ISP link to easily negotiate network parameters.

**PVC (Permanent Virtual Circuit)** - Virtual connection between two fixed endpoints on the network. Frame relay and ATM networking term.

**PWM (Pulse Width Modulation)** Modulation method. Signal modulates or alters the duty cycle of the pulse. In PWM, the carrier is a pulse stream. Also called PDM (Pulse Duration Modulation).

## Q

**QAM (Quadrature Amplitude Modulation)** Modulation method used by modems and DSL equipment. Combines two amplitude-modulated (AM) signals into a single channel. The modem inserts the signals 90 degrees (one-quarter cycle) out of phase with each other. Engineers call this 90-degree phase shift "quadrature." QAM modulates both carrier phase and amplitude. Doubles effective bandwidth.

## R

**RAM (Random Access Memory)** - Primary memory in a computer. The computer can overwrite this type of memory with new data. The "random access" part of RAM derives from the way RAM stores data: The computer can locate any bit of information in RAM in an equal amount of time. This fact applies regardless of where the bit resides.

**RIP (Routing Information Protocol)** - Routing protocol and part of the TCP/IP suite. RIP determines a route based on the smallest hop count between source and destination. RIP determines the smallest hop count by communicating with other routers within the network. Only use RIP if the target router also utilizes RIP.

**RJ-11** - Six-conductor modular telephone jack wired for up to four wires. The most common telephone jack in the world is the RJ-11. This connects telephone



instruments, modems, and fax machines to a female RJ-11 jack. The female jack often mounts to the wall or floor.

**RJ-45** - Eight-conductor modular telephone jack. Used for 10BaseT, ISDN and other data connections.

**Router** - Device that forwards data packets between local area networks (LANs) or wide area networks (WANs). Referring to routing tables and routing protocols, routers read the network address in each transmitted packet. Routers then decide where to send the packet. A router bases this decision on the best route. When a router port detects a packet, the router checks the routing table. The port attempts to match the network number of the destination IP address with its routing table entry. If the port finds a match, it forwards the packet to the destination network. With no match, the port forwards the packet to a router defined as the default gateway.

**RT-VBR (Real Time-Variable Bit Rate)** - Service type that supports time-sensitive applications such as voice. Varies the rate at which cells arrive.

## S

**Sideband** - Band of frequencies adjacent to the carrier. Modulation of the carrier creates sidebands. The sidebands contain the signal data, but consume bandwidth beyond what the carrier needs. In some cases, circuitry may suppress duplicate sidebands without harming the signal data. For instance, AM becomes single sideband when circuits delete one of two identical AM sidebands. Some single sideband equipment also suppresses the carrier frequency. The carrier must then be restored at the receiver before the signal can be demodulated, that is, recovered.

**Spanning Tree-Bridging** - Particular algorithm or formula. Transparent bridges use the spanning tree algorithm to dynamically determine the best source-to-destination path. This algorithm avoids bridge loops (multiple paths that link one segment to another) within a network. The algorithm determines all redundant paths and makes only one of them active. The spanning tree protocol (STP) is part of IEEE standard 802.1.

**Splitter** - DSL device that accommodates analog telephones, plus digital data access over the Internet. With a splitter, analog voice signals transmit at baseband frequencies. These combine with passband data transmission through a low-pass filter.

**Static routes** - Permanent routes that the router stores. The router uses these routes when determining where to forward IP packets that it receives.

**Subnet Mask** - Portion of a network. Distinguished from other portions by the use of a mask or subnet number. Subnet masks split one network into a set of mini networks or subnets. Subnetting helps to reduce traffic on each subnet. Subnetting also makes the network more manageable. Each subnet functions as if it were an independent

network.

**SVC (Switched Virtual Circuit)** - Virtual connection between two variable endpoints on the network. The switch makes at the beginning of the call, and breaks at the end of the call. A frame relay and ATM networking term.

## T

**TCP/IP (Transmission Control Protocol/Internet Protocol)** - Set of protocols designed to link dissimilar computers that use various networks and LANs.

**Topology** - Geometric physical or electrical configuration that describes a local communication network. The most common distribution system topologies are the bus, ring, and star.

## U

**UDP (User Datagram Protocol)** - A protocol within the TCP/IP protocol suite. When reliable delivery is unnecessary, communications may use UDP instead of TCP.

**UBR (Unspecified Bit Rate)** - Best effort service that does not require tightly constrained delay and delay variation. UBR provides no specific quality of service or guaranteed throughput.

**USB (Universal Serial Bus)** - External bus standard that supports data transfer rates of 12 Mbps.

## V

**VCI (Virtual Channel Identifier)** - Address of a virtual circuit. An integer that ranges from 0 to 65,535. The integer identifies a virtual channel that cells may traverse.

**VPI (Virtual Path Identifier)** - Address of a virtual path to a connection on an ATM network. An integer that ranges from 0 to 4,095.

## W-X-Y-Z

**WAN (Wide Area Network)** - Network base that covers a large geographic area.

**WINS (Windows Internet Name Service)** - Service that transposes Windows networking names into addresses usable for routing purposes.

Ready. Set. Connect.





## Contents:

US Robotics  
SureConnect ADSL  
Ethernet/USB Router  
Configuration Utility

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## Regulatory Information

### Manufacturer's Declarations of Conformity

#### FCC Declaration of Conformity

We declare under our sole responsibility that the U.S. Robotics SureConnect ADSL Ethernet/USB Router to which this declaration relates, is in conformity with the following standards or other normative documents:

ANSI C63.4-1992 Methods of measurement

Federal Communications Commission 47 CFR Part 15, subpart B

1) 15.107 (e) Class B Conducted Limits

2) 15.109 (g) Class B Radiated Emissions Limits

#### FCC Class B Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) this device may not cause harmful electromagnetic interference, and

2) this device must accept any interference received including interference that may cause undesired operations.

#### Radio and Television Interference

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and uses radio frequency energy and, if not installed and used in accordance with the instructions, may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna or cable input device.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following information prepared by the Federal Communications Commission helpful:

Consult the dealer or an experienced radio/TV technician for help.

#### Telephone Interference Bulletin

This document is available on the Internet through the FCC Consumer and Government Affairs Home Page at <http://www.fcc.gov/cgb>. Under Consumer alerts and factsheets=>Telephone>Miscellaneous Telephone Information, select Interference to Telephones.

**Caution:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

In order to maintain compliance with the limits of a Class B digital device, U.S. Robotics requires that you use a quality interface cable when connecting to this device. Suggested cable type is 90-ohm USB cable for the USB port, and standard telephone cable for the RJ-11 port. The telco cable needs to be connected with a minimum 26AWG telephone cable.

#### UL Listing/C-UL Listing

This information technology equipment is UL Listed and C-UL Listed for both the US and Canadian markets respectively, for uses described in the User Guide.

#### FCC Part 68 Registration Customer Information

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the bottom of this equipment is a label that contains, among other information, a product identifier in the format US: AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

This equipment uses the following Universal Service Order Code (USOC) jacks: RJ-11.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See this document for details.

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US: AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3).

If this equipment, U.S. Robotics SureConnect ADSL Ethernet/USB Router, causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact:

USR-Walnut  
528 Spanish Lane  
Walnut, CA 91789

If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

There are no serviceable parts in this equipment.

If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this equipment does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

**For Canadian router Users:**

## Utilisateurs de routers au Canada:

### Industry Canada (IC)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled Digital Apparatus, ICES-003 of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radio-électriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par l'Industrie. NMB-003

### Customer Information

**Notice:** This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

**Notice:** The Ringer Equivalence Number (REN) for this terminal equipment is 0.1B. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on a interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

**AVIS:** Le nombre équivalent de sonneries (REN) affecté à chaque terminal indique le nombre maximal de terminaux qui peuvent être branchés à une interface téléphonique. L'équipement terminal d'une interface peut comporter toute combinaison d'appareils, à la condition unique que le nombre équivalent total des sonneries de tous les appareils ne dépasse pas 5. Le nombre équivalent des sonneries se trouve sur la base du router.

**AVIS:** L'étiquette d'Industrie Canada (IC) permet d'identifier le matériel homologué. Cette homologation signifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents qui portent sur les exigences techniques relatives à l'équipement terminal. Cependant, le Ministère ne garantit pas que l'appareil fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le



matériel doit également être installé selon une méthode de raccordement autorisée. Dans certains cas, le câblage intérieur de la compagnie étant associé à une ligne individuelle, le service individuel peut être étendu au moyen d'un connecteur certifié (rallonge téléphonique). L'abonné ne doit pas oublier que la conformité aux conditions susmentionnées n'empêchera peut-être pas la dégradation du service dans certains cas. À l'heure actuelle, les compagnies de téléphone n'autorisent pas les utilisateurs à raccorder leur appareil au jack sauf dans des circonstances précises énoncées dans les contrats et tarifs de ces compagnies.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause d'un mauvais fonctionnement de l'appareil.

**AVIS:** L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur. Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations. Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement. Canadian router Users, your warranty and repair centre is:

U.S. Robotics  
Unit - 100  
13751 Mayfield Place  
Richmond, B.C. Canada V6V 2G9

**CE Compliance**  
**CE Declaration of Conformity**



We, U.S. Robotics Corporation of 935 National Parkway, Schaumburg, Illinois, 60173-5157, USA, declare under our sole responsibility that the U.S. Robotics SureConnect ADSL Ethernet/USB Router to which this declaration relates is in conformity with the following standards and/or other normative documents:

EN60950

EN55022

EN55024

EN61000-3-2

EN61000-3-3

We hereby declare that this product is in compliance with all the essential requirements of Directive 1999/5/EC. The conformity assessment procedure referred to in Article 10(3) and detailed in Annex II of Directive 1999/5/EC has been followed.

## **Product Specifications for ADSL Ethernet Router**

### **Standard Conformance**

Basic ADSL

### **Standards and Specifications**

Analog Devices 6480/6482 Eagle ADSL Chipset and 6489 Network Processor  
Supports full-rate G.DMT (ITU-T G.992.1) and T1.413 Issue 2 ADSL: up to 8 Mbps downstream and up to 1 Mbps upstream

Supports G.lite (ITU-T G.992.2) ADSL: up to 1.5 Mbps downstream and up to 512 Kbps upstream

Supports DSL handshaking (ITU-T G.994.1)

Multi-DSLAM interoperability including Alcatel, Globespan, Texas Instruments, and Analog Devices-based DSLAMs (results available upon request)

### **Transport Protocols:**

RFC 2516 PPP over Ethernet (Client and Relay)

RFC 2364 PPP over ATM

RFC 2225 (formerly 1577) Classical IP and ARP over ATM

RFC 2684 (formerly 1483) Multi-protocol over ATM (Bridged and Routed)

### **ATM Attributes:**

AAL Type: AAL 5

ATM Service Class: UBR, CBR, nrt-VBR, rt-VBR

Virtual Circuit Support: 16 PVCs

TR37 Auto-provisioning with ILMI v4.0

End-to-end loopback: OAM

ATM pacing, policing (QOS)

Traffic Management 4.1

**Data Rate:**

G.dmt: 8Mbps (downstream), 1Mbps (upstream)

G.lite: 1.5Mbps (downstream), 512Kbps (upstream)

**Media Type:**

Simultaneous data/voice (can coexist with HPNA)

**Service Provider:**

Digital Subscriber Line Access Multiplexer (DSLAM)

**Media Connection:**

(2)RJ-45 10/100 Ethernet ports

(1)USB 1.1 compliant port

ADSL port (RJ-11)

Console port (RS-232)

AC into power supply

Ethernet cable connection to computer, RJ-11 connection to ADSL provider

**System Requirements:**

- A host computer running Windows 95, Windows 98, 2000, Me, NT 4.0, XP, Linux, or Macintosh.
- A host computer running Internet Explorer 4.0 or later.  
32 MB of RAM and 10 MB of hard disk space (memory intensive applications may require more RAM).
- 200 MHz Pentium or faster compatible CPU.
- For Ethernet port, any computer with an Ethernet 10/100 RJ-45 interface.
- For USB port, host PC with Universal Serial Bus (USB) support.

**Physical Characteristics:**

**LEDs/Indicators:**

Power

DSL

USB

Ethernet 1

## Ethernet 2

### **Dimensions:**

Length 5.5 in.(13.97 cm)

Width 9.2 in.(23.36 cm)

Height 1.6 in.(23.36 cm)

Weight:14.4 oz. (0.448 kg)

**Power:** Consumption: 10V DC at 680mA

### **Environmental:**

Operating temperature conditions: 32 -122 °F (0 -50 °C)

Operating humidity: 5%to 95% RH non-condensing

Ready. Set. Connect.

